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THE NEW INTERNATIONAL YEAR BOOK

A COMPENDIUM OF THE WORLD'S
PROGRESS

FOR THE YEAR

1928

EDITOR

HERBERT TREADWELL WADE

NEW YORK

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PREFACE

The twenty-seventh issue of the NEW INTERNATIONAL YEAR BOOK covering the year 1928 continues this useful series long since established as a convenient and necessary aid to those who would appreciate world affairs and understand the history of their own times. The YEAR BOOK requires little in the way of introduction or explanation, as its purpose and function are quite as apparent to those using it for the first time as to the habitual reader. However, it is desirable to call attention to certain features appropriate to the year as well as innovations and developments which aim to make the YEAR BOOK even more serviceable to its readers. International in scope as well as in title, it presents the usual authentic summaries of statistics, progress, and history, for the nations of the world. In the UNITED STATES the historical record deals comprehensively with the Presidential Election of 1929, reciting the party differences, the actions of the National Conventions, and the progress and results of the political campaign. PROHIBITION continued not only as a great social experiment, but as a topic of general discussion and engrossing political concern. Accordingly, the YEAR BOOK carries along its dispassionate summary in an unbiassed manner which follows and supplements similar accounts in previous volumes, and taken in connection with them supplies an interesting history of this movement. PUBLIC FINANCE, though less striking, is of hardly minor importance, while TAXATION is equally a subject of general interest.

In Europe, the political affairs of the various countries and their continued attempts to attain increased economic stability are discussed under the heads of the different nations, along with the more significant and recent statistics. Naturally, the countries of Europe must be considered in their relations to such developments of the World War as the LEAGUE OF NATIONS, the present state of the REPARATIONS situation, and the growth of the WORLD COURT. In JAPAN, a new ruler was placed on the throne; in CHINA, the political situation continued involved and unsettled, while in INDIA, there were rumblings of unrest. Returning to the American Continent, the PAN-AMERICAN CONFERENCE held at Havana aroused general interest as a matter of world concern, while the South American tour of President-elect Hoover held possibilities of importance later to be revealed.

Individuals make the history of nations, and there will be found not only the usual obituary sketches of prominent persons who died during the year, but an enlarged and complete NECROLOGY which has been extended in scope over that of previous issues to afford information as to the lives of individuals of general or special interest.

In the YEAR BOOK's list of contributors will be found the names of a number of new authors and contributing editors as the result of a policy involving a further subdivision of departments and the securing of authorities more qualified to write in their respective fields. Thus, in Civil Engineering and Electrical Engineering, recognized educators and engineers have taken over these important departments, and such articles as BRIDGES, DAMS, DYNAMO-ELECTRIC MACHINERY, ELECTRIC POWER PLANTS, POWER, RADIO TELEPHONY AND BROADCASTING are adequately summarized. For the first time in the YEAR BOOK, adequate space is given to

PREFACE

PHOTOGRAPHY in a special article and the important progress of the year in this field is treated by a recognized expert. Under AUTOMOBILES, an interesting summary from the economic as well as the engineering standpoint is presented by a special writer. In PHILOSOPHY and PSYCHOLOGY, two new contributors of academic reputation present the developments in these respective fields.

Not only are the usual summaries in English and other literatures as carried for a number of years retained, but in this YEAR BOOK there is added a comprehensive sketch on ITALIAN LITERATURE; while under MODERN PHILOLOGY the outstanding advances in this field allied to literature are indicated. The striking developments in National and International Finance and Industry, requiring as they do for complete understanding an appropriate background, are summarized by a leading economist. In fact, throughout the fields of Art, Science, Education, Religion, Politics, and other activities, the YEAR BOOK continues to record the progress of the interesting year 1928, which marked the end of the ten-year period since the termination of hostilities at the Armistice in 1918.

In the preparation of this volume, the editor and the contributors must acknowledge the friendly coöperation and assistance from many agencies official and otherwise. It almost might seem from the aid thus furnished by the bureaus of the Federal and State governments, from the Dominion Bureau of Statistics of Canada, from various foreign governmental agencies, not to mention leading educational institutions, religious bodies, and learned and other societies, that all not only were actually interested in the undertaking but were proud to consider themselves as in a measure responsible for its preparation. Accordingly, to them, as well as to such industrial organizations as the General Electric Company, the American Telephone and Telegraph Company, the Silk Association of America, the Rubber Association of America, American Paper and Pulp Association, the American Gas Association, and many other friends, individual as well as corporate, the thanks of the editor and publishers are extended.

HERBERT TREADWELL WADE.

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KEY TO PRONUNCIATION

ā as in ale, fate. Also see **ɛ**, below.
â " " senate, chaotic.
â " " glare, care, and as *e* in there. See **ɛ**, below.
ā " " am, at.
ā " " arm, father.
ā " " ant, and final *a* in America, armada, etc.
 In rapid speech this vowel readily becomes more or less obscured and like the neutral vowel or a short *u* (**ū**).
“ " " final, regal, where it is of a neutral or obscure quality.
a " " all, fall.
ē " " eve.
ē " " elate, evade.
ē " " end, pet. The characters **ɛ**, **ā**, and **ā** are used for **ā**, **ae** in German, as in Baedeker, Gräfe, Händel, to the values of which they are the nearest English vowel sounds. The sound of Swedish **ā** is also sometimes indicated by **ɛ**, sometimes by **ā** or **ā**.
ɛ " " fern, her, and as *i* in sir. Also for **ō**, **oe**, in German, as in Göthe, Goethe, Ortel, Oertel, and for **eu** and **œu** in French, as in Neufchâtel, Crèvecœur; to which it is the nearest English vowel sound.
e " " agency, judgment, where it is of a neutral or obscure quality.
i " " ice, quiet.
i " " quiescent.
i " " ill, fit.
ō " " old, sober.
ō " " obey, sobriety.
ō " " orb, nor.
ō " " odd, forest, not.
o " " atom, carol, where it has a neutral or obscure quality.
oi " " oil, boil, and for **eu** in German, as in Feuerbach.
ō " " food, fool, and as *u* in rude, rule.
ou " " house, mouse.
ū " " use, mule.
ū " " unite.
ū " " cut, but.
u " " full, put, or as *oo* in foot, book. Also for **ū** in German, as in München, Müller, and *u* in French, as in Buchez, Budé; to which it is the nearest English vowel sound.
û " " urn, burn.
y " " yet, yield.
B " " the Spanish Habana, Córdoba, where it is like a *v* made with the lips alone, instead of with the teeth and lips.
ch " chair, cheese.

D as in the Spanish Almodovar, pulgada, where it is nearly like *th* in English then, this.
g " " go, get.
g " " the German Landtag, and **ch** in Feuerbach, buch; where it is a guttural sound made with the back part of the tongue raised toward the soft palate, as in the sound made in clearing the throat.
h " **j** in the Spanish Jijona, **g** in the Spanish gila; where it is a fricative somewhat resembling the sound of **h** in English hue or **y** in yet, but stronger.
hw " **wh** in which.
κ " **ch** in the German ich, Albrecht, and **g** in the German Arensberg, Mecklenburg; where it is a fricative sound made between the tongue and the hard palate toward which the tongue is raised. It resembles the sound of **h** in hue, or **y** in yet; or the sound made by beginning to pronounce a **k**, but not completing the stoppage of the breath. The character **κ** is also used to indicate the rough aspirates or fricatives of some of the Oriental languages, as of **kh** in the word Khan.
ñ " " in sinker, longer.
ng " " sing, long.
N " " the French bon, Bourbon, and **m** in the French Étampes; where it is equivalent to a nasalizing of the preceding vowel. This effect is approximately produced by attempting to pronounce "onion" without touching the tip of the tongue to the roof of the mouth. The corresponding nasal of Portuguese is also indicated by **N**, as in the case of São Antão.
sh " " shine, shut.
th " " thrust, thin.
th " " then, this.
zh " **z** in azure, and **s** in pleasure.
 An apostrophe [**’**] is sometimes used to denote a glide or neutral connecting vowel, as in **tā'b'l** (table), **kāz'm** (chasm).
 Otherwise than as noted above, the letters used in the respellings for pronunciation are to receive their ordinary English sounds.
 When the pronunciation is sufficiently shown by indicating the accented syllables, this is done without respelling; as in the case of very common English words, and words which are so spelled as to insure their correct pronunciation if they are correctly accented. Pronunciation is discussed in the NEW INTERNATIONAL ENCYCLOPEDIA.

THE NEW INTERNATIONAL YEAR BOOK

ABBE, ROBERT. American surgeon and educator, died at New York, March 7. He was born at New York, Apr. 13, 1851, and was graduated from the College of the City of New York in 1870 (A.B.), and from the College of Physicians and Surgeons, Columbia University, in 1874 (M.D.). While studying medicine he served for two years as an instructor in English, drawing and mathematics at the College of the City of New York. He was a general medical practitioner before becoming, in 1877, attending surgeon in the out-patient department of the New York Hospital. Among the other positions which he held were those of professor of didactic surgery at the Women's Medical College, surgeon to St. Luke's Hospital and to the New York Cancer Hospital, professor of surgery at the New York Post-Graduate Medical School, and lecturer of surgery at the College of Physicians and Surgeons. He specialized in the study and treatment of cancer, and was the first surgeon in America to substitute radium treatment for the knife. He spent some time in Paris with M. and Mme. Curie, and wrote a book about them and their work. Dr. Abbe retired from active practice and teaching in 1923.

ABBOT, FREDERIC VAUGHAN. American military engineer, died at Nonquitt, Mass., September 26. He was born at Cambridge, Mass., Mar. 4, 1858, and having been graduated from the United States Military Academy in 1879, he was commissioned second lieutenant in the Corps of Engineers on June 13 of that year. He rose through the successive grades until he was made brigadier general, Aug. 5, 1917. He served with the engineer battalion at Willetts Point, N. Y., 1879-82, and becoming assistant to Major Ernst, he worked on the survey of the boundary line between Maryland and Virginia 1883-84. For the next four years he was assistant to Colonel Gilmore, until he was put in charge of various defenses, and of river and harbor projects in South Carolina. He was lighthouse engineer of the Sixth District 1895-97, in the latter year being given charge of river and harbor works in Wisconsin and Minnesota. From 1900-10, he served as assistant to the Chief Engineers of the United States Army, later taking charge of harbor and defense works in Massachusetts and Rhode Island. In 1913 he was placed in charge of river and harbor engineering in the Third New York District, acting in this capacity until he was put in charge of the defenses at the southern and eastern entrance of the New York Harbor in 1915. In 1917 he was made

principal assistant to the Chief of Engineers, and commanding officer at Washington Barracks. He was acting Chief of Engineers from 1918 to 1919 and retired May 10, 1920.

ABORTION IN LIVESTOCK. See VETERINARY MEDICINE.

ABYSSINIA. See ETHIOPIA.

ACADEMY, FRENCH (ACADEMIE FRANÇAISE). The oldest of the five academies which make up the Institute of France, and officially considered the highest; founded in 1635, reorganized in 1816. The membership is limited to 40. The list of the Immortals at the beginning of 1928, in order of their election, was as follows: Paul Bourget; Gabriel Hanotaux; Henri Lavedan; René Bazin; Maurice Donnay; Raymond Poincaré, Eugène Brieux; René Doumic; Marcel Prévost; Henri de Régnier; le maréchal Louis Lyautey; Pierre de La Gorge; Henri Bergson; le maréchal Joseph Joffre; Louis Barthou; Monseigneur Alfred Baudrillart; le vicomte François de Curel (died, April 26); Jules Cambon; Georges Clémenceau; le maréchal Ferdinand Foch; Henry Bordeaux; Charles Bédier; André Chevrillon; Pierre de Nolhac; Georges Goyau; Marie Bremond; Georges de Porto-Riche; Edouard Estaunié; Henri Robert; Camille Julian; Georges Lecomte; Émile Picard; Albert Besnard; Émile Bertrand; Joseph de Chaumont, duc de La Force; Paul Valéry; Abel Bermant; Émile Male; Louis Madelin.

Émile Male was formally received in a public meeting in June. On June 7, Maurice Paléologue, diplomat and writer, was elected to membership in the Academy to fill the place made vacant by the death of Charles Jonnart, also a diplomat, who died in September, 1927. M. Paléologue, a descendant of the Byzantine Emperors, was born at Paris in 1859. He represented France at the marriage of the Spanish King in Madrid in 1906, served as French Ambassador in Rome, and has written a number of books on art, archaeology, and diplomatic subjects. He was formally received into the Academy in December.

M. Hermant, who was received into the Academy at the February meeting, was elected in 1927 to occupy the chair of René Boylesse, a case of one novelist succeeding another. He had published 103 volumes at the time of his election.

Late in the year the Academy awarded to André Perraud-Charmentier le prix du Budget of 2000 francs, for a monograph on *Le droit de réponse en matière de presse*, and two triennial awards of 3000 and 1500 francs to MM.

Langrand and Letellier. At the monthly meetings of the Academy, considerable time was devoted to the revision of its dictionary, in the consideration of certain words, each one being dealt with in all its meanings, uses, etc. See FRENCH LITERATURE; MODERN PHILOLOGY, *France*. The permanent secretary of the Academy is René Doumic, and the director, elected annually, was Émile Picard. The annual meeting is held in November.

ACADEMY OF ARTS AND LETTERS, AMERICAN. A society founded in 1904 by members of the National Institute of Arts and Letters, and incorporated and given a charter by Act of Congress approved April 17, 1916. The purposes of the organization are the furtherance of the interests of literature and the fine arts. The membership, limited to 50 chairs, is similar to that of the French Academy, and vacancies caused by death are filled by election by the members from the National Institute on the basis of life-time achievement in literature, painting, sculpture, architecture, and music.

At the annual meeting in November, 1928, announcement was made that the Academy had received funds for the erection of a new building, near the site of the headquarters building. The session was also made the occasion of the opening of an exhibition of the works of the late Edwin Austin Abbey, and plans were made for the observance of the twenty-fifth anniversary of the Academy in 1929. At this meeting Prof. Bliss Perry of Harvard read a paper in appreciation of William Crary Brownell, literary critic and author, who died on July 22, and a tribute was paid to William Milligan Sloane, historian, and late president of the Academy, who died on September 11, by Dr. Henry van Dyke. A third member of the Academy, William Rutherford Mead, architect, who died at Paris, June 20, 1928, was to be honored at a special meeting, for which plans were being formed. At a meeting of the Board of Directors in October, 1928, Dr. Nicholas Murray Butler, was unanimously elected president of the Academy, to succeed the late Prof. Milligan Sloane and was reelected as president at the annual meeting.

The membership at the time of the annual meeting on November 8, included the following in order of election: Daniel Chester French; Robert Underwood Johnson; Henry van Dyke; Arthur Twining Hadley; Edwin Howland Blashfield; Thomas Hastings; Brander Matthews; George Edward Woodberry; George Whitefield Chadwick; George de Forest Brush; Bliss Perry; Abbott Lawrence Lowell; Nicholas Murray Butler; Owen Wister; Herbert Adams; Augustus Thomas; Timothy Cole; Cass Gilbert; Robert Grant; Frederick MacMonnies; William Gillette; Paul Elmer More; Gari Melchers; Elihu Root; Brand Whitlock; Hamlin Garland; Paul Shorey; Charles Adams Platt; Archer Milton Huntington; Childre Hassam; David Jayne Hill; Lorado Taft; Booth Tarkington; Charles Dana Gibson; John Charles Van Dyke; Royal Cortissoz; Henry Hadley; Charles Downer Hazen; George Pierce Baker; Edwin Anderson Alderman; Edward Channing; Wilbur L. Cross; Hermon A. MacNeil; John Russell Pope; Edwin Arlington Robinson; James Earle Fraser; and John Huston Finley.

At a public meeting held on April 23, 1928, the Academy presented to Otis Skinner its

gold medal for good diction on the stage, which had been awarded by a ballot of the Academy.

The Directors elected in 1928 were: President, Nicholas Murray Butler; secretary, Robert Underwood Johnson; treasurer, Thomas Hastings; Herbert Adams, Wilbur L. Cross, Hamlin Garland, Cass Gilbert, Archer Milton Huntington, and Augustus Thomas. The headquarters are in the Academy building at 633 West 155th Street, New York.

ACADEMY OF SCIENCES. See NATIONAL ACADEMY OF SCIENCES.

ACCIDENTS. See RAILWAY ACCIDENTS; SAFETY AT SEA; WORKMEN'S COMPENSATION.

ACTINOMYCOSIS, äk'ti-nō-mī-kō'sis. This affection, while relatively rare, has recently come into prominence because the old treatment by surgery and iodide of potassium has been found inferior in the long run to the röntgen rays. Textbooks have for years stressed the older method of treatment as curative, but according to Desjardins of the Mayo Clinic the combination of surgical drainage and drugs has seldom cured a patient radically. During the period 1920-25 about thirty patients with this affection were treated at the Mayo Clinic and their cases are reported in *Radiology* for October, 1928. It is not to be understood that the older measures have been discarded for the contrary is the case; but the addition of the rays is sufficient to turn an unfavorable result to a favorable one. In stating that these patients are cured, this refers naturally only to the external location of the disease about the head and neck, which fortunately is much more commonly encountered than the internal location in the lungs, intestines, etc., where the outlook is bad. The X-rays are no new remedy for this condition for they have been on trial at least a quarter-century; but it is only recently that their importance has become recognized.

ADAMS, CYRUS CORNELIUS. American geographer, died at New York, May 4. He was born at Napierville, Ill., Jan. 7, 1849, and was graduated from the University of Chicago in 1876. While at the university he engaged in newspaper work. He removed to New York in 1884. His interest in foreign affairs led him into the study of geography, and he became one of the leading authorities in America on that subject. He was the first president of the department of geography of the Brooklyn Institute of Arts and Sciences, geographical writer for the *New York Sun* (1884-1906), editor of the *Bulletin* of the American Geographical Society (1908-15) and president of the American Society of Geographers, 1906. He wrote: *Commercial Geography for High Schools* (1901); *Elementary Commercial Geography* (1902); and *David Livingstone, African Development* (in *Beacon Lights of History*) (1902).

ADDISON'S DISEASE. This uniformly fatal although fortunately rare disease, which is characterized by low blood pressure, extreme weakness, brown discoloration of the skin, loss of appetite, extreme emaciation, etc., has long been known to be due to progressive destruction of the suprarenal glands with resulting shortage of the hormone known as adrenalin. In the great majority of cases this destruction is due to a local tuberculosis. Hardly any benefit can be claimed for organotherapy (suprarenal feeding), while the results of adrenalin injection are only temporary. It has often been suggested that healthy adrenal glands be grafted or im-

planted into the patient's body and this procedure is available because in the surgical removal of tuberculous kidneys it is possible to gain possession of a sufficient portion of healthy adrenal tissue. In the *Münchener medizinische Wochenschrift* for June 15, 1928, Dr. A. Reinhardt, a urological surgeon of Wiesbaden, announces the first operation of the kind and at the same time the first successful operation. The woman patient was in an advanced stage of Addison's disease and a piece of glandular substance was implanted in the abdominal wall. After several days a remarkable response was noted and six months later the patient was in fairly good condition with good appetite, a much improved blood pressure, return of the menses, etc. Doubtless the method will be tried out extensively.

ADELBERT COLLEGE. See WESTERN RESERVE UNIVERSITY.

ADELPHI COLLEGE. A non-sectarian college of arts and sciences for women, at Brooklyn, N. Y., incorporated in 1896. In the autumn of 1928 there were 626 students in the regular courses leading to the A.B. degree, distributed as follows: Seniors, 141; juniors, 149; sophomores, 185; and freshmen, 151. The summer session registration was 89 and the faculty numbered 44 in the autumn of 1928 and included the following additions: One professor in religion and Bible literature; one assistant professor in chemistry, and an assistant in physics. The income for the year was \$216,437. The library contained over 22,000 volumes. Three new buildings, under construction during the year on the new campus at Garden City, L. I., were to be completed by the autumn of 1929 in order that the college might be established there at that time. President, Frank Dickinson Blodgett, LL.D.

ADEN, a'den or a'den. A volcanic peninsula on the Arabian coast belonging to Great Britain: about 100 miles east of Bab-el-Mandeb. Area, 75 square miles; including the protectorate, about 9000 square miles. The settlement comprises also the peninsula of Little Aden, and some villages on the mainland, and the island of Perim, the last named having an area of 5 square miles. In 1921 the population of Aden and Perim was 54,923, of whom 80 per cent were Mohammedans. The population of the protectorate was about 100,000. The manufactures, which are unimportant, consist chiefly of salt and cigarettes.

As the principal commercial centre of the Arabian peninsula, Aden is the entrepôt for the Red Sea markets of Ethiopia, Eritrea, and Somaliland. It is also important as a fueling station, largely due to its position halfway between the Orient and Europe. The total imports during 1926-27 amounted to 88,060,903 rupees and the total exports for the same period to 69,540,118 rupees. The chief imports were cotton piece goods, grain, hides and skins, tobacco, coal, and provisions; the chief exports were coffee, gums, hides and skins, provisions, sugar, and tobacco. Most of the goods entering the foreign trade are transshipments. In the same year 1496 merchant vessels of 5,291,617 tons entered the port of Aden.

Attached to Aden are the Kuria Muria Islands off the Arabian coast, five in number, ceded by the Sultan of Muskat. Aden is under a British political resident with four assistants, the British Colonial Office having charge of all political questions and the British War Office

of military questions. The internal administration is in the hands of the Government of India. The gross revenue of the settlement in 1926-27 was 701,390 rupees. Political resident and General Officer Commanding in 1928, Maj. Gen. J. H. K. Stewart.

ADULT EDUCATION, AMERICAN ASSOCIATION FOR. An organization formed in 1926 to serve as a source of information concerning adult educational activities, and particularly to act as a clearing house through which the experience and findings of every adult educational enterprise may be made available to others. The Association seeks, also, to advise those who are already engaged in adult education, to aid those who are planning to initiate such work, to publish and secure the publication of material useful to those in the field, and to assist in studies of problems fundamental to adult education. It is the Association's view that adult education should count in its enrollment those men and women, young and old, who are no longer in contact with formalized education, whose primary interest lies in a vocation but who possess a secondary interest in their own educational improvement as a sustained and continuing process. Organizations directly concerned with adult education include libraries; universities and colleges, largely through their extension and other extra-mural departments; the public school system; chautauquas; open forums; people's colleges, labor schools; corporation schools; and numerous other agencies, including radio broadcasting, motion pictures, and newspapers. In rural communities and small towns, experiments have been made linking community organization with educational programmes, and in organizing and conducting classes with a traveling teacher, and various other experimental projects and studies were fostered by the Association in the urban field.

Toward the working out of teaching methods and subject matter for adult education, the Association has cooperated with the New School for Social Research, New York, in four teacher-training courses, and with the People's Institute of New York in experimental classes in various sections of Greater New York. *Adult Learning*, by Edward L. Thorndike and others, which was published during the year, embodies the results of experiments, conducted for the Association, to test the ability of adults to learn at various age levels. A study seeking to determine the influences which account for the formation of reading habits, desirable or otherwise, was undertaken, at the instance of the Association, by a committee of which Dean Gray of the College of Education, University of Chicago, was chairman. Other special studies undertaken were concerned with prison educational programmes, correspondence school methods, and collegiate alumni educational programmes. Membership in the Association is open to individuals or groups interested in adult education. It depends for its financial support upon dues from members, upon the interest of private individuals, and of educational foundations. The national conference in May, 1928, was held at Swarthmore College, Swarthmore, Pa. The officers elected in 1928 were: President, Dean Emeritus James E. Russell, Teachers College, Columbia University; vice president, Prof. Leon J. Richardson, University of California; treasurer, J. H. Puelicher, American

Bankers' Association, Milwaukee; secretary, Miss Margaret Burton, National Board of the Young Women's Christian Association, New York; executive director, Morse A. Cartwright, New York. The foregoing with fourteen other members composed the executive board of the Association. National headquarters are at 41 East 42nd Street, New York.

ADVANCEMENT OF SCIENCE. AMERICAN ASSOCIATION FOR THE. Founded in 1848 to advance science, to give a stronger and more general impulse and more systematic direction to scientific research, and to procure for the labors of scientific men increased facilities and a wider usefulness. In 1928 its membership included over 17,300 individuals interested in the advancement of science and the progress of knowledge and education, 118 autonomous and independent associated scientific societies of which 87 were officially affiliated with the Association, 23 being local academies of science. The direction of the Association rests in a council consisting of the officers, representatives of the affiliated societies and academies, and eight members elected at large by the council. It holds an annual meeting at the same time as the Association and operates in the interim through an executive committee. The activities of the Association are of three kinds: Those related to the holding of the annual and other meetings; those related to publications; and those related to the advance of knowledge by research. It has 15 sections representing the main current subdivisions of science, as follows: Mathematics, physics, chemistry, astronomy, psychology, social and economic sciences, historical and philological sciences, anthropology, geology, zoölogical sciences, botanical sciences, engineering, medical science, agriculture, and education.

The official organ of the Association is a weekly journal, *Science*, which furnishes an open forum for the discussion of questions regarding science and education, almost every branch of scientific knowledge being represented in its columns. In addition the Association issues an elaborate programme for each annual meeting, and it publishes at four-year intervals a volume of *Summarized Proceedings*, including a directory of members. The permanent endowment of the Association, the income from which is employed to advance scientific research, amounted in 1928 to \$150,095.66; grants are made annually to individuals or scientific organizations to promote research. Two regional divisions are conducted by the Association: The Pacific Division, including the Pacific States, Alaska, the Philippines, and the Hawaiian Islands, and the Southwestern Division, including Arizona, New Mexico, Colorado, western Texas, and northern Mexico. These divisions are autonomous, holding annual and other meetings and engaging in other projects in their respective fields.

The eighty-fifth meeting of the association was held at New York City, Dec. 27, 1928, to Jan. 2, 1929, with an attendance of about 5000, this being the largest meeting ever held. Forty-six independent societies met with the association and there were about 250 sessions, at which about 2200 papers and addresses were given by about 1900 persons. The science exhibition was well developed, with exhibits by commercial firms, individuals, and scientific organizations. Henry Fairfield Osborn, president of the American Museum of Natural History, eminent palæontol-

ogist and educator, was president. The president elected for 1929 was Robert A. Millikan, eminent physicist, director of the Norman Bridge Physical Laboratory of the California Institute of Technology, at Pasadena. The annual association prize of \$1000 was awarded to Dr. Oliver Kamm, of Parke, Davis & Co., Detroit, for his paper, "Hormones from the Pituitary Gland," abstracted in *Science* for Jan. 25, 1929. Information about the association may be obtained by addressing the office of the permanent secretary, Dr. Burton E. Livingston, which is in the Smithsonian Institution Building, Washington, D. C. The 1929 meeting of the Association was arranged for Des Moines, Iowa, from Dec. 27, 1929, to Jan. 2, 1930.

ADVANCEMENT OF SCIENCE, ASSOCIATIONS FOR. The eighty-fifth annual meeting of the American Association for the Advancement of Science (q.v.) was held in New York City, December 26 to 31, 1928, with about 45 affiliated societies. The Southwestern division of the American Association for the Advancement of Science met at Flagstaff, Ariz., April 23 to 26. The Pacific division met at Claremont, Calif., June 13-16, 1928. The British Association for the Advancement of Science (q.v.) met at Glasgow, September 5 to 12; the French Association, at Le-Rochelle, July 23 to 28, and the Swiss Society of Natural Sciences, at Lausanne, August 30 to September 24.

ADVENT CHRISTIANS. See ADVENTISTS.

ADVENTISTS. The Advent Movement had its origin in America with William Miller, who believed not only in the coming of Christ in person, power, and glory, but that such an advent was at hand and that the date might be fixed with some definiteness. The movement, however, began in England and on the Continent, under the leadership of the Rev. Hugh McNeile and the Rev. Edward Irving, in England, and the Rev. Joseph Wolfe, DD., LL.D., in Prussia. A Prophetic Conference was held at Albany Park in 1836, at the residence of Henry Drummond, Esq., afterwards a member of the British Parliament, with "Eight days of serious study of the prophecies," at which the Rev. Hugh McNeile presided. The first general gathering in America of those interested took place in Boston, October, 1840, the movement at that time being wholly within the existing churches, but in April, 1845, a conference was held at Albany, N. Y., at which the adherents of the Adventist doctrine were organized and a declaration of principles adopted, embodying the views of Mr. Miller. For the next ten years this organization included practically all the Adventists, but gradually separate bodies developed, beginning with the Advent Christian Church, in 1855, and including the Seventh-Day Adventists, organized in 1860; Life and Advent Union, in 1864; The Church of God (Adventists), in 1866; and The Churches of God and Christ Jesus, in 1888.

ADVENT CHRISTIAN CHURCH. This church, which is congregational in church government, holds simply to the general imminence of Christ's return but takes the position that the day cannot be determined. It holds a biennial general conference, the 1928 meeting being held at Dowling Park, Florida, June 17-24. Statistics for 1927, covering 44 conferences, showed 447 churches; 541 ordained ministers; 106 licensed ministers; 26,237 church members; 306 Sunday schools; 20,600 Sunday-school members; 121 Young People's Societies of Loyal Workers, with

4307 members. Eighteen conferences are not included in these totals. The denomination maintains four publication societies and two educational institutions, Aurora College of Aurora, Ill., and the New England School of Theology in Boston. Periodicals published include the *World's Crisis* (Boston), *Messiah's Advocate* (Oakland, Calif.), *Our Hope* (Mendota, Ill.), and *Present Truth Messenger* (Live Oak, Fla.). Among the philanthropic institutions of the denomination are the American Advent Christian Home and Orphanage at Dowling Park, Fla., and the Vernon Home for ministers and missionaries at South Vernon, Mass. The Rev. J. William Denton was general director in charge of the headquarters at 160 Warren Street, Boston 19, Mass.

SEVENTH-DAY ADVENTISTS. The largest denomination of the Adventist group, embracing 12 union conferences in the United States and Canada. This denomination believes that the seventh day of the week, from sunset on Friday to sunset on Saturday, is the Sabbath established by God's law and that immersion is the only proper form of baptism. The local church is congregational in government, although under the general supervision of the conference. The statistical report of the denomination for 1927 indicated 2222 churches in the North American Division, 850 ordained ministers, and 112,276 church members. Sabbath schools numbered 2775 and the membership, 119,557. Figures for the foreign division were 3765 churches; 924 ordained ministers; 161,788 church members; and 5727 Sabbath schools, with an enrollment of 204,435. The movement maintained, in the United States and Canada, 67 educational institutions, which in 1927 had 13,559 students enrolled. Of the colleges and seminaries, Loma Linda Medical College, Calif., and Pacific Union College, St. Helena, Calif., were the largest. There were also 78 educational institutions maintained in foreign countries. The denomination had 18 publishing houses in North America, and 38 in foreign countries; denominational literature was issued in 132 languages; and evangelistic work was conducted in 127 countries. Periodicals of the movement included: *Advent Review and Sabbath Herald* (Washington); *Signs of the Times* (Mountain View, Calif.); and *Watchman* (Nashville, Tenn.).

AERONAUTICS. The year 1928, marking as it did the twenty-fifth anniversary of successful flight of a heavier-than-air machine, was a year of progress and development in all fields of aeronautical activity. More and more was the interest of the public aroused in aerial transportation and the facilities offered for the transport of persons, mail, and freight were being utilized to an ever-increasing degree. Technical developments were to be noticed on a proportionate scale, while the year's record of notable flights was replete with trips that showed greater range and reliability for airplanes as well as the operation of dirigibles under unusual conditions.

Observing the usual arrangement of the YEAR BOOK, some of the more significant developments of the year 1928 are recorded in the following paragraphs:

BALLOONS

NATIONAL ELIMINATION BALLOON RACE. This competition for 1928 was started at Bettis Field, Pittsburgh, Pa. on May 30, with a field of 14 entrants and was won by Capt. W. E. Kepner in the balloon, *Army No. 1*, landing 1 mile north of Weems, Va., a distance of 261½ miles. The National Balloon Race for 1928 was hardly as successful as in previous years, and in fact the distance accomplished was the shortest recorded in the history of this competition which began in 1909. The previous low record was made in 1914 by R. A. D. Preston, who landed 301 miles from the starting point at St. Louis. The reason for the short flights was a sudden thunderstorm area which developing quickly brought 11 of the 14 competing balloons to the ground in the vicinity of Pittsburgh within approximately three hours, leaving but 3 to accomplish substantial distances as indicated by the accompanying tabulation. The storm resulted in a series of casualties, Lieut. Paul Evert, pilot of the *Army No. 5* and Walter W. Morton, aid to W. T. Van Orman in *Goodyear No. 5*, being killed; while Van Orman suffered a fractured leg and James F. Cooper, an aid on the *City of Cleveland* piloted by C. K. Wollan, was severely bruised. The pilot jumped and landed safely with his parachute. The record for the 14 starters with their standing is given herewith.

Place Entry	Pilot and Aid	Place of Landing	Distance miles
1. Scott Field	Capt. W. E. Kepner	1 mi. N. Weems, Va., 22 mi. W. Irvington, Va.	261½
2. C. A. Palmer	Lt. Wm. O. Eareckson	4 mi. E. SSE Cumor, Va.	248
3. Detroit Balloon Club	C. A. Palmer		
	J. W. Mell	3 mi. W. Widewater, Va.	187½
4. Detroit Balloon Club	W. C. Naylor		
	Russell Wherritt	3½ mi. E. Connellsville, Pa.	30½
5. NAS Lakehurst, N. J.	G. M. LeGallee	1½ mi. S. Perryopolis, Pa.	21½
	W. A. Kilgoff		
6. Langley Field, Va.	Lt. T. G. W. Settle	Foxdale, Pa. 1 mi. S. Youngwood, Pa.	18¾
	Lt. Paul Evert		
7. Goodyear Tire & Rubber Co.	Lt. U. G. Ent	Youngwood, Pa.	17¾
	W. T. Van Orman		
8. Cleveland Chamber of Commerce	W. W. Morton	Christy Park near Youngwood, Pa. W. Newton Road	14¼
	C. K. Wollan	3 mi. E. Irwin, Pa.	12¾
9. E. J. Hill and A. G. Schlosser	J. F. Cooper		
	E. J. Hill	6 mi. W. Jeannette, Pa. 5 mi. N. Irwin Pa.	11
10. Geo. Hineman	A. G. Schlosser	Irwin, Pa.	10
	Geo. Hineman		
11. Scott Field	E. F. Johnson	3 mi. N. Irwin, Pa. On Pa. R.R. Tracks.	
	Capt. Edmund Hill		
12. Gardner Motor Co., St. Louis, Mo.	Lt. J. G. Fisher	Pitcairn, Pa.	7¾
	H. E. Honeywell		
13. NAS Lakehurst, N. J.	Arthur C. Hoskins		
	Lt. J. H. Stevens	4 mi. W. Trafford City	5¾
14. Sun Telegraph	Lt. Geo. F. Watson		
	W. G. Bennett		
	Walter Chambers		

THE GORDON BENNETT INTERNATIONAL BALLOON RACE. The Gordon Bennett 1928 Balloon Race was won by Captain W. E. Kepner, U. S. Army, who piloted the Army balloon which landed July 1 following its ascent on June 30 at Detroit. As this was the third consecutive victory this trophy became the permanent property of the United States. There were 12 contestants representing 7 different nations who went aloft on June 30, with adverse weather conditions, and as a result the record of the winner, Captain Kepner, who landed at Kenbridge, Va., a distance of 460.9 miles, was considerably less than 1927 record of 800 miles. The competition, however, was close as the German balloon, *Barmen*, piloted by Hugo Kaulen, landed at Chase City, Va., a distance of 459.4 miles, and the French balloon, *Blanchard*, piloted by Capt. Charles Dollfus, was third, with a distance of 447.9 miles. Of the other contestants, four landed in West Virginia in mountainous country, these being *The Detroit*, piloted by William C. Naylor who landed at Cass, West Virginia; the Belgian balloon, *Wallonie*, piloted by Joseph Thonnard, which landed at Beverly, W. Va.; the German balloon, *Brandenburg*, piloted by Otto Bertram, which landed at Davis, W. Va.; and the Swiss balloon, *Helvetia*, piloted by E. L. Maag, which landed near South Worthington, W. Va. The other competitors included a Danish balloon, *Denmark*, S. A. M. Rasmussen, pilot, which landed at Roanoke, Va.; an American balloon, *American Business Club*, from Akron, Ohio, C. A. Palmer, pilot, which also landed at Roanoke, Va.; an Argentine balloon, *Argentine*, with Eduardo Bradley, pilot, which landed at Millboro, Va.; a French balloon, *Lafayette*, George Blanch, pilot, which landed near Bulay, Va., and a German balloon, *Munster*, F. Eimermacher, pilot, which landed near Big Roland, W. Va.

AIRSHIPS

NEW UNITED STATES NAVY AIRSHIPS. On Oct. 5, 1928, the United States Navy Department awarded to the Goodyear-Zeppelin Corporation of Akron, Ohio, a contract for the construction of two rigid airships at a total cost of \$7,825,000; one to cost \$5,375,000 and the other to cost \$2,450,000. These new dirigibles were to be known as the *ZRS-4* and the *ZRS-5*, and were to be built with hulls of duralumin longitudinal and transverse girders and steel wire bracing. These girders were to be of a new design with greater strength and efficiency than any hitherto used. The engines and the engineers were to be housed within the hull doing away with external cars to contain the motors, so that the air resistance of the craft would be reduced and its safety increased, as it was found in the wreck of the *Shenandoah* that no one who remained in the hull suffered any injury. The propellers were to be supported on brackets from the hull and were to be driven from the engines through transverse shafts and bevel gears. The propeller axes were so arranged that they could be turned into the vertical position so as to exert up or down thrust to aid in the taking-off or landing of the airship.

The outside of the hull was to be covered with aluminized fabric stretched smooth and tight; while there would be 11 separate cells of gas-tight fabric containing the helium gas used for buoyancy, affording a nominal gas volume of 6,500,000 cubic feet. The new airships were to be

fuller and less slender than the *Los Angeles*, designed in 1922, and would have a range of operation $2\frac{1}{2}$ times greater than that craft. The hull would be of sufficient strength for storm or squall conditions approximately twice as severe as the *Los Angeles* could encounter with success. There would be provided three longitudinal corridors and passageways completely around the circumference of each main transverse frame, affording opportunity of access and inspection at all parts of the ship. Such facilities were provided so as to make possible the execution of repairs in flight. Another notable feature of the two airships would be provision for housing airplanes in special hangars within the hull so that they could be launched while the dirigible was in flight.

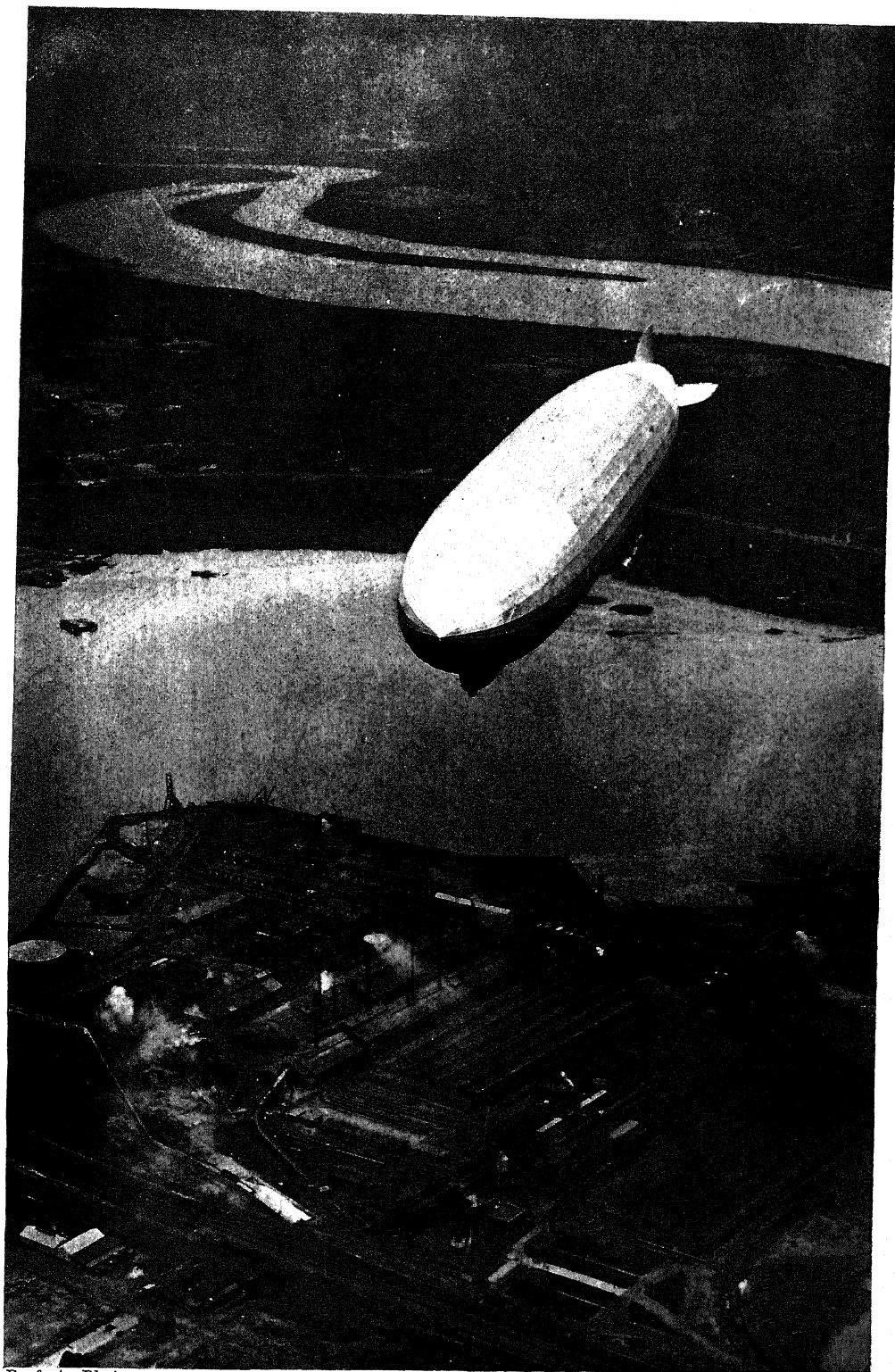
PRINCIPAL CHARACTERISTICS OF THE LOS ANGELES AND THE ZRS-4

	<i>Los Angeles</i>	<i>ZRS-4</i>
Nominal gas volume, cu. ft.	2,470,000	6,500,000
Length overall, ft.	658.3	785
Maximum diameter, ft.	90.7	132.9
Height overall, ft.	104.4	146.5
Gross lift, lb.	153,000	403,000
Useful lift, lb.	60,000	182,000
Number of engines	5	8
Total horse power	2,000	4,480
Maximum speed, knots	63.5	72.8
Range without refueling at 50 knots cruising speed, nautical miles	3,500	9,180

BRITISH AIRSHIPS. In Great Britain active progress was being made during the year on two dirigibles of 500,000,000 cubic feet capacity. The State airship, *R-101*, was under construction at the Royal Airship Works at Cardington, where was to be located the home station of the British Empire Air Service, and the *R-100* was being built by the Airship Guarantee Company at Howden. The *R-101* is designed to accommodate 100 passengers and to have a lifting force up to 150 tons. She is to have a range in still air with the ordinary commercial load of 4000 miles at a cruising speed of 63 miles per hour with a minimum speed under the specifications of 70 miles an hour at an altitude of 5000 feet. The length of the airship is 724 feet. The passenger accommodations are arranged on two floors stretching over two bays of the ship, with an area of 5550 square feet on the upper deck exclusive of the promenades, but including a large single lounge. The ship carries a dining room for 50 passengers and on the deck below is a smoking room, while two-berth sleeping cabins are located on both decks. A long covered corridor connects the passengers' quarters with the nose of the ship and steam radiators are employed to warm the quarters of the passengers.

The *R-101* has engines using a heavier fuel instead of gasoline as hitherto, and employs the ordinary commercial fuel oil that was used in the 650-horse-power Beardmore Tornado engines. Five of these units are employed driving air screws with blades of variable pitch, which also can be reversed and set to a neutral pitch. An auxiliary engine using gasoline is required to start the main engine in each car to drive the air compressor and to generate electric current until the air screw operated dynamo is at work under the influence of the air stream.

The *R-100* differs from the *R-101* in that she has the more usual type of gasoline engines. It was anticipated that both ships would be available for tests early in 1929 and a demonstration



P. & A. Photo

TRANSATLANTIC FLIGHT OF THE GERMAN AIRSHIP "GRAF ZEPPELIN"
OVER PERTH AMBOY, N. J.

OCTOBER 15, 1928

flight to America was contemplated for the *R-100*. Five mooring towers and sheds had been designed at various points throughout the British Empire and it was planned to establish complete service throughout its wide extent.

TRANSATLANTIC FLIGHT OF THE GRAF ZEPPELIN. One of the notable events of the year was the successful transatlantic crossing of the German dirigible, *Graf Zeppelin* (LZ-127) which leaving Friedrichshafen October 11 arrived in the United States in 111 hours and 38 minutes after a trip of approximately 6300 miles. Leaving Friedrichshafen at 2 A. M. on the morning of October 11, the great dirigible headed southwest over France and Spain and passed Gibraltar at approximately midnight, and then laying a westerly course across the Atlantic the airship flew over Funchal, Madeira Islands, and passed the Azores in the afternoon of October 12. From here a course was laid to Bermuda, and near this island on October 13 a severe storm was encountered in which a portion of the fabric of the lower surface of the port fin, as well as a portion of the upper surface, was ripped by the heavy wind pressure. This mishap impaired the stability of the airship and required temporary repairs by four members of the crew who climbed out on the metal spars and removed or made fast the flapping fabric.

Careful navigation was required to avoid further storms and speed was materially reduced, the ship being affected seriously by the inefficiency of the stabilizer on the port side. Progress was slow on October 14, but on the following day, when at 6 P. M. the airship passed over Bermuda, with better atmospheric conditions the Virginia coast was reached and the *Graf Zeppelin* flew over Washington, Baltimore, and Philadelphia, proceeded to New York where she turned and then finished the long journey at the Lakehurst, N. J., mooring mast. On the following day as the wind died down, the *Graf Zeppelin* was placed in the hangar alongside the United States Navy dirigible, *Los Angeles*.

The reception of the Zeppelin on reaching the coast of the United States and at its picturesque passage over the Eastern States was enthusiastic in the extreme. Dr. Hugo Eckener, the designer of the ship, who also had brought over the *Los Angeles* from Germany, was commander and with him were, E. A. Lehmann, first officer; H. C. Fleming, second officer; Wilhelm Siegle, chief engineer; and E. von Schiller, Anton Wittemann, Max Pruess, and Walter Scherz, navigators. The crew numbered 40. Lieutenant-Commander Charles Rosendahl, U. S. N., who was the commander of the *Los Angeles*, made the journey as a guest and observer. Twenty passengers, one of whom was a woman, were carried.

The *Graf Zeppelin* after making repairs at the Navy hangar at Lakehurst, N. J., arranged for an extensive trip through the Middle West, passing over the more important cities, but unfavorable weather conditions interfered so that this was abandoned, and after refuelling with ethane gas made by distilling off the heavier constituents of natural gas at Winchester, Ky., the ship departed at 1.45 A. M., October 29, on its eastward return trip, taking a course slightly south of the great circle route, but close to the steamship lanes. Sixty-four persons, 48 bags of mail, and 341 pounds of freight were carried and while rough weather at first was

encountered the flight from Lakehurst to Friedrichshafen was made in 71 hours and 10 minutes which was a better record than that made by the British dirigible, *R-34*, when it flew from Roosevelt Field to England in 75 hours, in 1919.

The *Graf Zeppelin* encountered a severe storm off Newfoundland during the first day which continued during the night, the wind at times having a velocity as great as 88 miles per hour driving the ship backwards. Bad weather was also encountered in the Bay of Biscay and fog and clouds over western Europe. However, the return trip was made successfully and the experience of Dr. Eckener and his crew added materially to the available knowledge of long flights of dirigibles.

While the westward trip was neither the first nor by any means the fastest transatlantic trip for a large dirigible, yet on account of the stress of unfavorable conditions it was in many respects more valuable than other voyages more auspiciously carried on. A new world's record was made for duration in the air for both heavier and lighter than air craft, and naturally the flight of the *Graf Zeppelin* was compared with that of the British dirigible, *R-34*, made in July, 1919, from East Fortune, Scotland, to Mineola, N. Y., 3130 miles in 108 hours; and that of the *Los Angeles* which flew from Friedrichshafen to the United States in 1924. The *R-34* returned to England without mishap, while the *Los Angeles* cruised extensively over the United States in the service of the Navy Department.

The *Graf Zeppelin*, the general plans of which have been described in earlier YEAR BOOKS, was the 117th rigid type dirigible to be built by the Zeppelin Corporation at Friedrichshafen, Germany, and with an overall length of 778 feet and a maximum diameter of 100 feet was the largest dirigible to be constructed up to that time. The total weight of the craft was 121 tons and the gross lift 107 tons. It carried fuel for 6200 miles and with a crew of 26 men it afforded space for a pay load of 15 tons. In the test flights which were carried on during September and October from Friedrichshafen, a maximum speed of 80 miles per hour and a cruising speed of 73 miles per hour was demonstrated.

The hull in its general design resembled the *Los Angeles* of the United States Navy, being thicker and blunter than the earlier Zeppelins, though of streamline form. The main frames consisted of 28-sided polygons made of duralumin, spaced 49 feet apart with two auxiliary frames between each of the main frames. The frames were braced by wire and trusses. The frame and the longitudinal girders were triangular in section with circular section booms replacing the open angle sections which previously had figured in the Zeppelin design. There was a keel-framing system which reinforced the bottom sides of each polygonal frame. The navigation and control cabins together with accommodations for passengers were provided in the main, or forward, gondola rigidly attached to the keel framing with its forward part brought into the upward curve of the hull; while its bottom was so designed as to make an easy curve with the hull proper.

In the forward part of the main gondola was the control room with telegraph and other communications with the engine gondolas and other parts of the ship. Adjoining the control room

was the chart or navigation room and behind this was the radio room on one side and the galley on the other. Next came the passenger saloon and dining room, luxuriously furnished, and still further aft opening on a central corridor were 10 double-berthed sleeping compartments with lavatories. A passage led to the crew's quarters and the storage space for supplies, mail, and baggage inside the keel framing of the hull. Along the keel framing a main gangway was provided from bow to stern with branch galleries affording access to the engine gondolas. The hull of the ship is traversed by a second fore-and-aft gangway located just below the longitudinal axis to which access is given to the 30 gas bags or ballonets. Sixteen of these contain 3,710,000 cubic feet of hydrogen gas used for buoyancy, while the remainder carried the blau gas employed for fuel.

This gas is a hydrocarbon product with a specific gravity ranging from 1.04 to 1.08, developed by Herman Blau of Augsburg, Germany, and was employed on account of its low specific gravity as preferable to liquid fuel where a variation in weight due to consumption requires the release of hydrogen in order to maintain the equilibrium of the airship. Here as the gas is consumed it is replaced by air so that the variation in the gross weight of the craft need not be considered. It is obtained by an oil-cracking process and has a heat content of about 1800 B.t.u. per cubic foot. Its specific gravity is 1.08 compared with air. Power was supplied by 5 Maybach-Zeppelin VL-2, 12-cylinder, water-cooled, V-type engines each of 550 horse power, placed in individual gondolas two pair abreast beneath the hull amidships, and one along the keel near the stern. The weight of each engine was 2450 pounds, or greater per horse power than an airplane engine, but as designed they were more economical in fuel consumption. The placing of the engines was so planned that there was no interference in the separate slip streams. Each engine could be directly reversed by the simple shifting of the cam shaft.

In place of large quantities of water ballast ordinarily used in airships which could be released to compensate for diminished buoyancy, the *Graf Zeppelin* carried approximately eight times the gasoline which was used for fuel in order to decrease the weight. The general specifications of the *Graf Zeppelin* were stated as follows:

Overall length	778 ft.
Maximum diameter	100 ft.
Maximum height	111 ft.
Form ratio	7.7
Displacement	3,710,000 cu. ft.
Maximum speed	80 m. p. h.
Cruising speed	73 m. p. h.
Power plant (5 Maybach VL-2 engines)	2,750 h.p.
Cruising range	7,000 mi.
Crew (normal)	30
Passenger capacity	20
Gross lift	107 tons
Designed pay load	15 tons

AIRSHIP ITALIA. Another attempt at Arctic exploration with a dirigible occurred during the year when Gen. Umberto Nobile made a successful flight over the North Pole on May 24, but was forced down on May 25 when the airship encountered a gale of snow and wind. The crash occurred less than five miles off Foyn

Island north of Spitsbergen at 80.30 degrees north and 28 degrees east. The *Italia* left Stolt, Germany, at 3.23 p.m. on May 3 and arrived at Vadsoe, North Norway, on May 4, in the course of which the envelop was torn and the machinery damaged. On May 5 the *Italia* landed at Kings Bay, Spitsbergen, where several days were spent in repairs. On May 11 at 7.48 A.M. a flight was made from this base, but lasted only 8 hours on account of dense fogs and heavy winds so that after an eight-hour trip the ship returned to its station. On May 15 in the afternoon, the *Italia* started and progressed through unexplored regions of the Arctic, notwithstanding that fog was encountered and ice formed on the sides of the dirigible. On May 16 Franz Josef Land was left behind and the *Italia* headed toward Lenin Land, crossing the Polar Sea and after sighting Cape Nicholas and making a thorough exploration, a return was made to King's Bay. Here activity was suspended on account of adverse winds until May 23, when at 4.40 in the morning the *Italia* set out and the following day crossed over the North Pole at 1.20 A.M. after a flight of 750 miles from King's Bay, reporting its position and its passage over the pole by radio. The ship then headed south for Spitsbergen, but the following day, Friday, May 25, radio reports ceased and it was feared that the airship had been forced down on the ice. The *Citta di Milano*, Nobile's relief ship, planned to start north, but a call was sent out from the wrecked expedition. Various means of relief were organized as discussed under POLAR RESEARCH. Late in the year was published *Tragedy of the Italia* by Davide Giudici.

NOTABLE FLIGHTS

LINDBERGH'S CENTRAL AMERICAN FLIGHT. The notable good-will flight of Col. Charles E. Lindbergh in his *Spirit of St. Louis* which had begun in December of 1927 continued during the following year and on January 1 the distinguished aviator left Belize, British Honduras, for San Salvador. Staying here until January 3 he proceeded on a rather rough trip to Honduras and on January 5 continued to Managua, the capital of Nicaragua. Costa Rica was reached on January 7, where a notable reception was given to the American aviator, and two days later he flew to Panama where the field on which he landed was named for him. On January 12 Colonel Lindbergh proceeded to Colon in the Canal Zone, being received by the airplanes of the U. S. Army having their headquarters at France Field. He remained in the Canal Zone until January 26, on account of a change in his plans, and then proceeded to Cartagena in Colombia in response to the invitation from that State and from Venezuela. On January 27, he flew to Bogota where again he was the recipient of notable attention both official and popular, and two days later he proceeded to Maracay, Venezuela. From Maracay to St. Thomas in the Virgin Islands was the next stage in his journey and was about 1000 miles, being the longest flight he had attempted after leaving Washington. This port was reached successfully and on February 2, he proceeded to Porto Rico and two days later to Santo Domingo where he visited the historic places connected with the memory of Christopher Columbus. On February 6 he flew to Port-au-Prince in Haiti, and on February 8 he made a flight of nearly

900 miles to Havana where once more he received a most enthusiastic welcome and the highest official honors. Leaving Havana on February 13 early in the morning, he passed over Florida and reached his destination at St. Louis, Mo., that same evening. Colonel Lindbergh made 16 stops on this flight of 9060 miles and was 116 hours and 30 minutes in the air.

It was interesting in this connection that Colonel Lindbergh reported on February 6 when landing at Port-au-Prince that the *Spirit of St. Louis* had at that time been in the air more than 459 hours covering 40,000 miles in 467 flights. There had been no replacement of the original motor, which at that time had not received a major overhauling, and neither plane nor engine had over 5 per cent replacements. Colonel Lindbergh reported further that both plane and engine were in excellent condition, capable of much longer service and he expressed as his opinion that a modern plane and engine under appropriate conditions of care and maintenance should have a minimum life of 150,000 miles. The *Spirit of St. Louis* was deposited in the Smithsonian Institution, and Colonel Lindbergh was awarded during the year the Congressional Medal of Honor, a special medal voted by Congress, the Woodrow Wilson Peace Award—a medal and \$25,000—the International Aeronautical Federation's Gold Medal for the greatest achievement in aviation in 1927, and the Harmon Trophy of the International League of Aviators.

COSTES-LEBRUX FLIGHT. This notable flight by Capt. Dieudonne Costes and Lieutenant-Commander Joseph Lebrux, two French aviators, referred to in the 1927 YEAR BOOK, at the close of that year had reached Lima, Peru, in the course of an extended tour that began on October 10 from Le Bourget Airport, Paris. On Jan. 11, 1928, these French aviators proceeded to Guayaquil, Ecuador, and at Panama City on January 13 they met Colonel Lindbergh on the good-will flight referred to above. Costes and Lebrux on January 16, then proceeded to Caracas, Venezuela, and on January 21, to Baranquilla, Colombia, returning on January 24 to Colon Guatemala City on January 26, Mexico City on January 29, and New Orleans on February 4 were the next stops on this memorable trip, the 1100 miles from Mexico City to New Orleans being flown in 10 hours and 8 minutes. Montgomery, Alabama, was reached on February 6 and on February 8 they left for Washington in heavy weather, losing the escort of United States Army planes, but finding their way to Bolling Field where they were greeted by President Coolidge and many government officials. On February 11 they flew from Washington to Mitchel Field and on March 2 they started across the continent, but were forced down at Sharon, Pa. From this point their trip to San Francisco with incidental stops was successful, and they sailed from that port for Tokyo on the steamship, *Korea Maru*. Flying from Tokyo on April 8 they continued their flight and reached Paris on April 14, where they had an enthusiastic reception and official honors.

HINKLER'S FLIGHT. On February 7, Capt. Herbert John Louis Hinkler in an Avro Avian light plane left Croydon Airport, England, for a flight of 12,000 miles to Port Darwin, Australia, which he accomplished in 16 days, with actual flight time of 134 hours and an average speed of from 90 to 100 miles per hour, cutting the

flight record between England and Australia by 12 days and making the fastest trip from England to India, as well as the first non-stop flight from London to Rome. The stops and distances made on this notable trip were as follows: Rome—900 miles, Malta—420 miles, Tebrock—650 miles, Ramleh—650 miles, Basra—800 miles, Jask—700 miles, Karachi—600 miles, Cawnpore—600 miles, Calcutta—600 miles, Rangoon—750 miles, Burma—450 miles, Singapore—750 miles, Bandoeng—600 miles, Bima—850 miles, and Port Darwin—970 miles. Hinkler's flight was the longest solo flight to be made and also the longest flight ever made in a light plane, the almost 1000 miles across the open water of the Tasman Sea being a notable achievement for a small plane of the so-called "flivver" type.

EUROPE TO AMERICA FLIGHT OF THE BREMEN. On Apr. 13, 1928, the Junkers monoplane, *Bremen*, with Capt. Hermann Koehl and Commandant James Fitzmaurice, Chief of the Irish Free State Air Force, as co-pilot, and a passenger, Baron Gunther von Huenefeld who had furnished the financial support of the expedition, was forced down on Greenely Island in the Straits of Belle Isle off the coast of Labrador after the first flight by an airplane from Europe to America. The *Bremen* left Germany on March 26 at 8.20 A.M. and flew to the Baldonnell Airdrome at Dublin, Ireland, where it arrived at 4.30 P.M. after a flight of 9 hours and 35 minutes duration. Here bad weather interfered with immediate progress westward, so that it was April 12 before the Junkers machine was able to resume its flight. The *Bremen* was sighted at 7.05 A.M. over Costello, Galway, and from that time was not reported until it was forced down on Greenely Island, 400 miles off its course after flying 36½ hours, on account of shortage of fuel, an airline distance of 2125 miles. The trip was planned to terminate at Mitchel Field, Long Island, N. Y., and aroused extraordinary interest on two continents, as nothing was heard of the aviators until after their forced landing. They were relieved by a Canadian plane on April 15. In making the landing the Junkers monoplane was damaged, but it was hoped that repairs could be made with spare parts shipped by an American plane.

One of the relief planes sent for this purpose started from Detroit on April 20 piloted by Floyd Bennett and Bernt Balchen. It was a trimotored Ford plane that had been under test in snow storms and other conditions likely to be encountered in the far north in preparation for an antarctic trip. Both pilots started while ill, and, at Murray Bay, Bennett was compelled to give up and was hurried to a hospital in Quebec with pneumonia from which he failed to recover. A notable trip was made by Col. Charles A. Lindbergh on April 24 to carry a pneumonia serum, but it was in vain and the distinguished aviator died on the morning of April 25. (See BENNETT, FLOYD.) The German-American fliers in another plane reached Curtis Field at one o'clock on April 27 and after attending Bennett's funeral in Washington returned to New York for an elaborate reception which was given them on April 30 and May 1. Later they made a tour of the United States by airplane.

TRANS-PACIFIC FLIGHT. One of the most notable flights of the year was that of the *Southern Cross* a tri-motored Fokker monoplane with whirlwind engines, the sister ship of Commander Byrd's Arctic airplane, which left Oakland, Cali-

fornia, on May 31 at 8.51 A.M. and reached Honolulu June 1 at 9.49 A.M. Hawaiian time, continuing on June 3 at 5.20 A.M. for Fiji where it arrived at Suva on June 5 at 6.23 P.M. On June 8 the *Southern Cross* left Fiji at 2.52 P.M. and accomplished the 1762 miles to Brisbane, Australia, in 21 hours, 18 minutes, marking the completion of the trans-oceanic flight which, however, was continued as far as Sydney. The *Southern Cross* was piloted by Capt. Charles J. Kingsford-Smith, commander and pilot, with Capt. Charles T. P. Ulm, relief pilot, both Australians, with two Americans, Harry W. Lyon, navigator, and James W. Warner, radio operator. The flying time from Oakland Airport, Calif. to Honolulu, a distance of 2400 miles, was 27 hours and 28 minutes; while the 3200 miles, the longest over-water flight so far attempted, from Honolulu at Fiji, was made in 34 hours and 33 minutes, the 1762 miles to Brisbane, Australia, in 21 hours and 18 minutes. The fourth leg of 500 miles brought the *Southern Cross* to Sydney, and the last flight to Melbourne, the whole requiring a total of some 88 hours flying time for 7800 miles. The *Southern Cross* and its crew received a notable reception in Australia. This trip while it broke no world record was notable for the accuracy of the navigation and for the fact that the radio operator was constantly in communication with either shore stations or ships throughout the flight.

WILKINS ARCTIC FLIGHT. Capt. George Hubert Wilkins who had made many systematic explorations in the Polar Regions, in company with Lieut. Carl Ben Elson made a notable flight of 2100 miles from Point Barrow, Alaska, to Spitsbergen on April 21. The plane employed was a Vega-Lockheed monoplane with wasp engine which was transported by sea and rail to Fairbanks, Alaska. A flight of 500 miles was made from Point Barrow where the trip proper began two days later. This flight was made to demonstrate the superiority of the airplane over the dirigible in Arctic exploration, and continued the systematic work of Captain Wilkins in this region. He made copious notes both geographical and meteorological, and by a number of geographers it was believed that across the Arctic was the shortest and best air route to the Far East. After arriving at Spitsbergen, Captain Wilkins announced to the world the successful outcome of his flight and he and his companion received many honors. See POLAR RESEARCH.

AMELIA EARHART'S FLIGHT. The first aerial crossing of the Atlantic by a woman was accomplished when Amelia Earhart flew from Trepassey, Newfoundland, on June 17 in the trimotored monoplane, *Friendship*, reaching the coast of Wales in 20 hours and 40 minutes. Miss Earhart flew from Boston Harbor on June 3 for Newfoundland, accompanied by Wilmer Stultz, pilot and radio operator, and Louis E. Gordon, mechanic. The *Friendship* was a multiple-engine sea-plane constructed according to specifications prepared by Commander Richard E. Byrd, who was consulted by Miss Earhart in regard to her trip. A wait of 14 days was compelled at Trepassey on account of unfavorable weather, though a number of attempts were made to start which were unsuccessful on account of the heavily laden airplane. Reducing the weight to only sufficient fuel for the trip and a small margin for safety, or about 700 gallons in all, the *Friendship* left on June 17 for Valencia, Ireland. Notwithstanding wind, rain, and snow, the flight was ac-

complished successfully although Stultz, the pilot, went beyond his original destination in Ireland and landed the plane after 2000 miles of flight off Burryport, Carmarthenshire, Wales.

COURTNEY'S FLIGHT. Frank T. Courtney, a British aviator, in an attempt at a western Trans-Atlantic flight landed in the Azores on June 28 after a flight from England. He was flying in a Dornier-Napier whale flying boat accompanied by E. B. Hosner, his passenger and financial backer, Hugh Gilmour, wireless operator, and Fred Pierce, mechanic. The expedition was delayed at the Azores until August 1, when a start for Newfoundland was made and after unfavorable weather for several hours good conditions were encountered making possible a start across to the objective point. A fire breaking out on the plane, it was brought to the surface of the water without disaster and fortunately without an explosion. The fire was extinguished and 18 hours afterward the fliers were rescued by the steamship, *Minnewaska*, bound for New York.

CARRANZA'S FLIGHT AND DEATH. The good-will flight of Emilio Carranza, a Mexican aviation officer 23 years of age, came to an unfortunate end on July 12 when the young aviator crashed in a lonely bog in New Jersey. Carranza had flown from Mexico City to Washington with a single forced landing in North Carolina, and received many honors in Washington and New York where his trip was considered a return courtesy after the flight of Lindbergh to Mexico in the previous year. Carranza was flying in a plane which was a duplicate of the one used by Lindbergh in his flight to Paris. He left Roosevelt Field near New York on the evening of July 12 between thunderstorms. The following day his wrecked plane and body were found by three berry pickers.

FERRARIN-DEL PRETE FLIGHT. On July 4 the Italian aviator, Captain Arturo Ferrarin, and Maj. Carlo P. del Prete flew in the *Savoia-64*, a Savoia-Mardiette monoplane with Fiat motors in which on June 2 they had made a world's duration record for sustained flying of 58½ hours from Montecello Field near Rome. The object of their flight was Rio de Janeiro, Brazil, and they proceeded southerly over the Mediterranean Sea and along the African coast as far as Villa Cisneros, Rio de Oro, where they turned westerly across the South Atlantic. They made a landing at Point Genipabu near Natal, Brazil, making a non-stop distance record of 4475 miles, in 51 hours. A short delay was caused by damage to the chassis of the plane on landing, but this was repaired and the Italians flew to Rio de Janeiro where they received an enthusiastic reception.

GOEBEL-TUCKER CONTINENTAL RECORD FLIGHT. On August 20-21, Col. Arthur Goebel with Harry Tucker as passenger in the wasp engine monoplane, *Yankee Doodle*, flew from Los Angeles to New York in 18 hours and 51 minutes supplanting the previous record of 26 hours and 50 minutes made by McCready and Kelly, May 2-3, 1923, but flying from the east to the west coast. On October 25 Captain Collier with Tucker as a passenger flew the *Yankee Doodle* from east to west in 24 hours, 51 minutes, a record non-stop flight for this direction. On their return in the same airplane they crashed in Crook Canyon south of Prescott, Ariz., and both aviators were killed.

AROUND THE WORLD RECORD. Captain C. B. D. Collier also was the pilot on a record trip

around the world in which he was accompanied by John H. Mears. Leaving New York on June 29 they flew to the steamship, *Olympic*, where the *City of New York*, their Fairchild cabin monoplane with a 400 horse-power Pratt and Whitney Wasp engine was loaded and disassembled. After reaching Cherbourg six days later, they flew in the *City of New York* across Europe and Asia to Tokyo, crossing the Pacific on the steamship, *Empress of Russia*, and landing at Victoria, B. C., July 21. Thence they flew to New York stopping at Spokane, Minneapolis, Chicago, Cleveland, and Susquehanna, reaching Miller Field, Staten Island, on July 22, making the complete trip in 23 days, 15 hours, 21 minutes, and 3 seconds, using trains, planes, ocean liners, and motor cars wherever needed. Of the total of 19,725 miles traveled, 11,190 miles were actually flown in the air.

NATIONAL AIR RACES, 1928. The National Air Races for 1928, were held at Mines Field, Los Angeles, Calif., September 8-16. While the competitions did not develop any extraordinary records, yet the various commercial planes entered showed higher rates of speed than in prior contests and demonstrated the all around dependability of the new types of planes and engines participating. In connection with these air races an aeronautical exposition was held together with conventions of the Commercial Airplanes Manufacturers' Section of the Aeronautical Chamber of Commerce of America, the Society of Automotive Engineers, the National Aeronautic Association, and the National Airport Executives. The competitions opened with transcontinental races, the "On to Los Angeles Cross Country Race" from New York to Los Angeles, a distance of 2939 miles, Class A, for \$10,000 in prize money, being won by Earl Rowland of Wichita, Kansas, leading a field of 22 other entries and taking \$5000, first prize. His time was 27 hours, and 31 seconds, and he flew in a Cessna plane with a Warner motor. The Class B transcontinental race over the same distance with \$7000 as prize to the winner, was won by John Livingston in a Waco 10 plane with Whirlwind motor, his time being 22 hours, 56 minutes, 59 seconds. The Class C race also from New York to Los Angeles with a first prize of \$5000, was won by Robert W. Cantwell in a Lockheed Vega plane with a Wasp motor in 24 hours, 9 minutes, 1 second, there being three entrants in this competition. An international air race from Windsor, Canada, to Los Angeles, a distance of 2145 miles, with two entries, was won by William H. E. Drury in a Waco plane in 19 hours, 55 minutes, 41 seconds. In the California Class A race for a flight from San Francisco to Los Angeles, from a field of nine entries, H. S. Myrhes in a Simplex Red Arrow plane with Kinner engine won the first prize of \$1000, making the distance in 3 hours, 10 minutes, 20 seconds. The California Class B race from Oakland to Los Angeles with a first prize of \$1250 was won by H. C. Lippiat in a Travel Air plane with Whirlwind engine in 2 hours, 26 minutes, 49 seconds. There were eleven contestants for this prize.

The special air races at Mines Field were marked by a number of important competitions in which aviators from the United States Army and Navy competed, as well as by exhibitions by aviation units and individuals from the various services. Colonel Lindbergh made exhibi-

tion flights, as did Miss Earhart and other aviators, some of whom demonstrated new types of planes. Some of the more significant competitions and the winners are given herewith, Around the World Flight Memorial Races, limited to military VB-2B planes, distance 50 miles, first place, Lieut. Herbert P. Becker, time, 33 minutes, 21 seconds. Army Observation plane race, two-place type, won by Lieutenant Barber. United States Army, in a Douglas plane with Liberty engine, time, 28 minutes, 14.19 seconds, or a speed of 127.49 miles per hour. The United States Marine Corps 50-mile race, a closed event for Observation Squadron No. 8, was won by Michael Wodarczyk in 20 minutes, 14 seconds. The Mason M. Patrick Trophy Race over 120 miles, a closed event for pilots of the Third Attack Group, United States Army, was won by Lieut. George R. Acheson, in 51 minutes, 36.22 seconds, or a speed of 139.525 miles per hour. The John L. Mitchell Trophy Race, 120 miles, a closed event for United States Army pilots of the First Pursuit Group, was won by Lieutenant Lawson in 46 minutes, 31.72 seconds, or a speed of 154.743 miles per hour. The United States Navy Race, a closed event for navy pilots of the UB-2B Squadron, was won by Lieutenant Johnson in 20 minutes and 12 seconds. A civilian free-for-all for engines under 510 cubic inches over 50 miles, was won in the final heat by Earl Rowland in a Cessna plane with Warner motor, making the distance in 26 minutes, 50.74 seconds, or at a speed of 111.74 miles per hour. In the civilian free-for-all classes with engines of 720 cubic inches displacement or less over 50 miles, first place was taken by D. C. Warren in a Travel Air plane with a Hisso motor in 24 minutes, 18.75 seconds, or a speed of 123.39 miles per hour. In a similar race over 75 miles in the 800 cubic inches class, E. E. Ballough in a Laird plane with a Whirlwind J 4B motor won in 33 minutes, 52.78 seconds, or a speed of 130.82 miles per hour. In the Liberty Engine Builders' Trophy Race, 60 miles, for observation type two place planes, first place was taken by Lieut. J. L. Kane, United States Navy, in a Vought Corsair plane with a Pratt and Whitney Wasp engine in 25 minutes, 18.19 seconds, or a speed of 142.275 miles per hour. The Navy Pursuit race, 50 miles, for Navy pursuit pilots only, was won by Lieut. R. J. Crommelin, United States Navy, in a F-2-B 1 plane with a Pratt and Whitney Wasp engine in 20 minutes, 18.06 seconds, or a speed of 147.77 miles per hour. The Army Pursuit Race, 50 miles, for Army service pilots was won by Lieut. W. T. Cornelius in a Curtiss Hawk plane with a Curtiss D-12 motor in 20 minutes, 18.41 seconds, or a speed of 147.73 miles per hour. The Military Pursuit Race, 60 miles, for military planes only, was won by Lieut. T. P. Jeter, United States Navy, in a Boeing XF4B plane with a Pratt and Whitney Wasp motor, in 20 minutes, 53.85 seconds, or a speed of 172.26 miles per hour.

AIRPLANE RECORDS. During 1928 a number of new airplane records were made which indicated the continued advance of aviation. For Class C airplanes returning to point of departure without refuelling, the world's record for duration made at Jacksonville, Fla., Mar. 30, 1928, by Edward Stinson and Capt. George Halderman in 53 hours, 36 minutes, and 30 seconds, went from the United States to Germany. At Dessau,

Johann Risztics and Wilhelm Zimmerman in a Junkers W-33 plane with a Junkers LV 280 horse-power engine were in the air 65 hours, 25 minutes, July 5-7, 1928. Unlike other duration flights, these aviators were not forced down by lack of fuel, but from fear of landing on a field not properly lighted. The distance records both for closed circuit and airline flight went to Italy, whose distinguished aviator, Maj. Arturo Ferrarin (who had flown from Rome to Tokyo in 1920) and Com. Carlo Del Prete, in a Savoia-Marchetti S-64 plane with a 12-cylinder Fiat-22 water-cooled engine over the course Casale de Prati Torre Flaria, Fara, d'Anzio, May 31 to June 2, accomplished 7666.6 kilometers (4763 miles), until compelled to land by exhaustion of their fuel. These two aviators on their flight from Rome to Touros, Brazil, July 3-5, 1928, made the airline record of 7188 kilometers (4466 miles).

In Class C for an airplane with a pay load of 500 kilograms (1102.31 pounds) Reginald Schinzinger of Germany, in a Junkers W-34 plane with a Bristol Jupiter VII engine of 420 horse power, at Dessau on September 14, made an altitude record of 9190 meters (30,150 feet). The speed record for 500 kilometers for this class went to Great Britain, where Capt. H. S. Broad in a De Havilland "Hound" airplane with a Napier-Lion XI engine of 550 horse power at Stag Lane, Reading, made 255,333 kilometers (158,656 miles) per hour on April 27, 1928. Schinzinger on the date previously mentioned, with the same plane, achieved an altitude record with a pay load of 100 kilograms (220.412 pounds); while Captain Broad at the same time as mentioned above, made a speed record of 100 kilometers with a pay load of 100 kilograms, achieving 261.172 kilometers (160.280 miles) per hour, and also a speed record for 500 kilometers of 255,333 kilometers (158,656 miles) per hour. In this category for 1000 kilometers, the French aviator, M. Paillard, in a Bernard plane with Jupiter engine of 420 horse power on January 24 at LeMerle-Arles-Port Louis made 218,275 kilometers (135,628 miles) per hour.

With a pay load of 2000 kilograms (4409.24 pounds) Paillard and Camplan of France in a Bernard 190T plane with Hispano-Suiza 600 horse-power engine on the course from Le Bourget to Gondreville on Nov. 23, 1928, made a speed record for 100 kilometers of 223,546 kilometers per hour (138,904 miles per hour). The duration record for an airplane refueling in flight, 60 hours and 7 minutes, was made by Adjutant Louis Crooy and Sergeant Victor Groenen of Belgium in a De Havilland-9 plane with a Siddeley-Puma engine at Tirlement June 2-4, 1928.

During the year new records for light planes were made, and for two-seaters, weighing empty, less than 400 kilograms (881 pounds) records were made for closed-circuit and airline distance and altitude. The closed distance record went to Czechoslovakia, where Joseph Hermansky and François Machacek in an Avia BH-9 plane with a Walter 60 horse-power engine at Prague on July 11, 1928, made 1500 kilometers (932 miles). The airline distance record in this class went to Switzerland with 1305.5 kilometers (811.19 miles) made on October 16, by Captain Wirth and Mlle. Erika Naumann, in a Klemm-Daimler monoplane with a Mercedes-Daimler 20 horse-power engine flying from Boblingen air-

port to Mieschkance, Poland, supplanting a record of 1058.2 kilometers (657.4 miles) made on July 13 by two aviators from Czechoslovakia. In this same category an altitude record of 6054 meters (19,862 feet) was made by Capt. G. De Havilland and Mrs. De Havilland in Great Britain, flying in a DH Gipsy engine of 85 horse power at Stag Lane on July 27.

In the second category for light airplanes, comprising single-seaters weighing, empty, less than 200 kilograms (440 pounds), Charles Kaszala of Hungary in a Lampich H-MAFD plane with a Thorutskai 18 horse-power engine made an airline distance record from Budapest to Pola of 517.04 kilometers (320.03 miles).

In the third category for single-seaters weighing, empty, from 200-350 kilograms (440-771 pounds), Commandant Vichereck of Czechoslovakia on June 6-7 made a closed-circuit distance record of 2500 kilometers (1553 miles) flying in an Avia BH-11B plane with a Walter 60 horse-power engine at Prague. The airline distance record for such a plane came to the United States, where Harry J. Brooks, in a Ford Monoplane with a Ford-type AC motor of 30 horse power on Feb. 21, 1928, flew from Detroit to Titusville, Florida, a distance of 1564 kilometers (972 miles). This record on Oct. 5, 1928, was supplanted by Capt. A. Vichereck of Czechoslovakia in an Avia monoplane with a Walter 60 horse-power engine flying from Prague to Bednodenjanovsk, a distance of 2011 kilometers (1249.6 miles).

Major Mario de Bernardi, the famous Italian record holder, on Mar. 30, 1928, made a speed record for a seaplane of 512,776 kilometers per hour (318,624 miles per hour) flying in a Macchi 52 monoplane with a Fiat engine-type AS-3 over the Schneider Trophy Contest course at Venice, Italy, on March 30. A record of 319.57 miles per hour was made on November 4, at Calshot, England, by Flight Lieut. D'Arcy Greig, but it did not count as a world record, the conditions requiring at least five miles per hour better for a new record. In the class of seaplanes flying with a pay load of 500 kilograms (11,023 lbs.), Fritz Harder, of Germany, flying in a Junkers W-34 plane with a Bristol Jupiter VII engine of 420 horse power at Dessau on Nov. 6, 1928, made an altitude record of 7458 meters (27,749 feet), supplanting the American record of 22,178 of Lieut. George R. Henderson, United States Navy, made April 14, 1927.

For seaplanes with a pay load of 1000 kilograms (2204.12 pounds), records for duration and distance came to the United States. The former was accomplished by Lieutenants Zeus Soucek and Lisle J. Maxson, United States Navy, in a Navy PN-12 plane with two Wright R-1750 motors of 525 horse power each, flying at Philadelphia, May 25-26, when 17 hours, 55 minutes, 13.6 seconds was recorded. A distance record for a plane of this class of 2150 kilometers (1336 miles) was achieved by Lieut. A. W. Gorton, United States Navy, and Chief Boatswain E. E. Reber, in a Navy PN-12 plane with two Pratt and Whitney motors of 525 horse power each, flying at Philadelphia, July 11-12. In this class the altitude record went to Germany, where on November 7, 1928, Franz Kneer in a Junkers W-34 plane with a Bristol Jupiter VII engine with 420 horse power at Dessau, attained a height of 6389 meters (20,961

feet). Richard Wagner, of Germany, flying in a Dornier Superwal BR-142 plane with 4 Gnome-Rhone-Jupiter engines of 480 horse power each at Frederikshavn-Lindau on Jan. 20, 1928, made a speed record of 100 kilometers or 209.546 kilometers (130.105 miles) per hour, and on February 2, a speed record for 1000 kilometers or 177.279 kilometers (110.155 miles) per hour.

For seaplanes with a pay load of 2000 kilograms (4409.24 pounds), a number of new records were made during the year. Lieut. A. W. Gorton, United States Navy, and Chief Boat-swain E. S. Reber, flying in a Navy PN-12 plane with two Pratt and Whitney engines of 525 horse power each at Philadelphia on July 11-12, 1928, made a duration record of 16 hours, 39 minutes, a distance record of 2150 kilometers (1336 miles), and a speed record for 2000 kilometers of 130.427 kilometers (81.043 miles) per hour. Richard Wagner, of Germany, in the flight on January 20, already mentioned, made a speed record for 100 kilometers with a pay load of 2000 kilograms of 209.546 kilometers (130.105 miles) per hour, and on February 2 a speed record for 500 kilometers of 179.416 kilometers (111.483 miles) per hour, and for 1000 kilometers, a speed record of 177.279 kilometers (110.155 miles) per hour. Wagner also made a series of records in January and February with a pay load of 400 kilograms (881.8 pounds). For duration, on February 5, his record was 6 hours, 1 minute, 56 seconds; for distance on the same date, 1000.160 kilometers (621.468 miles). For altitude he achieved on January 23, 2845 meters (9334 feet), and on January 30, a speed for 100 kilometers of 209.546 kilometers (130.105 miles) per hour. On February 2 his speed for 500 kilometers was 179.416 kilometers (111.483 miles) per hour, and for 1000 kilometers, 177.279 kilometers (110.155 miles) per hour. On January 23 Wagner made a further record for the greatest pay load carried to an altitude of 2000 meters (6561.7 feet), namely, 4037 kilograms (8900 pounds).

NATIONAL AIR TOUR. This interesting annual competition to demonstrate reliability started with 25 aircraft from the Ford Airport, Detroit, Mich., on June 30, and after a trip of approximately 6500 miles, 24 of the competing craft made a landing at the starting point on July 28. One of the 25 planes dropped out of the contest in Oklahoma through failure to secure defective parts for an Americanized motor of foreign origin. First prize, with a total of 27,013.4 points for airplane efficiency and reliability, was won by John Paul Wood of Warsaw, Wis., flying a Waco 10 biplane with a Wright J-5 engine. Second place was won by a Ford plane piloted by Frank N. Hawks with a score of 24,390.8, and third by a Stinson Junior plane operated by Randolph Page with a score of 22,786.5. The point scores ran down to 5,523 for the last plane in the competition. The winner was awarded the Edsel Ford Airplane Reliability Trophy and \$2500 cash prize; while a second prize of \$2000, and a third prize of \$1750 were awarded, with cash awards to each competitor finishing in the first ten, with a special award of \$200 for every pilot completing the tour not included among the first ten winners. The flight was made over a carefully arranged course with 32 legs, the cities visited extending to the Pacific coast and comprising the leading towns of the United States. As in previous years, the scoring was based on a computation

which involved not merely speed but the weight carried per horse power, the engine displacement, and the performance over the individual legs of the flight; the aim being to determine the merits of the different planes on the basis of reliability rather than mere speed and power.

In connection with the National Air Tour of 1928 it was found that the formula used was not altogether satisfactory, and after the competition there was considerable discussion as to developing a more suitable formula for the 1929 National Air Tour. In the formula referred to, the load, speed, stick, and unsticked tests were made previous to the tour at the Ford Airport, and figures so derived were not changed, but the formula was applied to the individual planes considering the mileage and time over individual legs. It was further stated by critics of the formula that the preliminary tests were given an undue weight over actual performance in flight. The committee of the Detroit Board of Commerce having the contest in charge stated that it was perfectly willing to consider any suggestions looking to the development of more satisfactory conditions for this competition.

DIESEL ENGINES FOR AIRPLANES. During the year progress was made toward the development of an airplane engine of the Diesel type which would eliminate gasoline spark-plug-ignition systems and carburetor, affording increased safety from fire and increased economy. Furthermore the elimination of the electrical ignition system made it possible to employ the radio communication between planes without the usual interference on that account. In the United States in the early autumn the announcement was made that the Packard Motor Car Company had achieved success in its initial experiments with a Diesel type radial air-cooled engine which was installed in a standard Stinson-Detroiter monoplane and tested at the Packard Company's proving grounds near Utica, Michigan. This engine had a weight of less than 3 pounds per horse power thus bringing into practical use with airplanes a type of engine which hitherto had been considered unsuitable on account of the great weight per horse power of earlier types. In fact, the first experiments made in this field involved an engine weighing approximately 100 pounds per horse power, manifestly unsuitable for heavier-than-air aircraft. The Packard Diesel aircraft engine not only satisfied the requirements of weight, but was said to carry a plane 25 per cent further per pound of fuel than the types in use. The machine tested developed 200 horse power and had every promise of successful commercial application. No details of the engine were announced during the year as the company wished to make an exhaustive series of tests before putting the type on a production basis.

In Europe experimental engines employing heavy oil fuel and self-igniting on the Diesel principle were also developed and it was stated in November that the Junkers firm of airplane manufacturers, who were pioneers in the construction of all metal aircraft, had developed such a motor. As in the case of the Packard Diesel, details had not been supplied at the end of the year.

THE CIERVA AUTOGYRO. This remarkable invention of Juan de la Cierva, a Spanish engineer was successfully demonstrated during the year and attracted considerable attention, it being entered for the Guggenheim safety competition.

As recorded in various issues of the YEAR BOOK, the first autogyro was built about 1920 and involved two sets of rotating vanes placed one above the other and moving in opposite directions by air forces. This system did not prove successful as the vanes would not rotate at equal speed, but the subsequent arrangement was designed with but one rotating wing system where the pilot was able to control the angle of incidence with the blades, so that the required balances of lift could be secured by changing the incidence where the air speed was low. This plane also failed to accomplish the inventor's purpose as did a number of other attempts to secure mechanical control. In the successful autogyro in 1928 each blade was hinged freely to a bearing about which the system rotated so that it had a wide range of movement, being free to fold upward or droop downward. The usual type of rotating vane system designed for the autogyro consisted of four blades each built on a single tube spar. The section of these blades is so arranged that the main spar is not subject to heavy torsional loads, while the spar root is connected to the central block running on ball bearings of the mast projecting above the fuselage of the complete machine. The autogyro as so far developed consists of a standard airplane fuselage, landing gear, a tail unit, provided with an ordinary propeller driven by a normal type of engine. The ailerons are carried on the sides of the fuselage as there are, of course, no wings to the rudder and other controls are essentially the same as on an airplane. When the machine is driven forward under the influence of the propeller the horizontal air flow causes the vanes to rotate at a constant speed and to support the fuselage.

An impressive test of the autogyro was had on September 18 when Cierva left Croydon Air-drome, London, at 10.05 A.M. and after a brief stop at Lympne Field, Kent, crossed the Channel in 20 minutes, landing at St. Inglevert at 11.06 A.M. At 12.53 P.M. Cierva again arose and flew to Abbeville whence he continued to Le Bourget Field, Paris, arriving at 4.20 P.M. Señor de la Cierva on this trip was accompanied by Henri Bouche, editor-in-chief of *L'Aéronautique*, and an average speed for the flight was given as 90 miles per hour with an altitude approximating 4000 feet in crossing the Channel. The autogyro was accompanied for some distance on this flight by a large London-Paris Air Union commercial plane which at times it exceeded in speed with a maximum speed of over 105 miles per hour. On September 20 the autogyro was wrecked and Cierva and a passenger experienced minor bruises, the accident being attributed to a broken landing gear cable and not to any fundamental weakness in the craft itself. The type of autogyro developed in 1928 made a 3000-mile journey around England in August and functioned successfully in numerous tests. As a result of the trials several orders were placed for this machine during the year and a British company was organized for its manufacture.

COMMERCIAL AVIATION

In 1928, a year of progress and prosperity for the aeronautical industry, for the first time perhaps, at least in the United States, aviation and aeronautics in general were entitled to be considered as an industry in which the public as a whole rather than a few enterprising pio-

neers had become interested. It had passed out of the hands of the few and with the coöperation and management of banking and financial interests combinations and mergers were consummated and capital provided to carry on in adequate fashion both the operating and manufacturing sides of the industry, which began to rank as an independent effort and no longer related to the manufacture of motor cars and motor engines, the Ford and the Velie interests being the only large participants from that field.

It was estimated that approximately 4000 planes were built in 1928 and there was an active demand from transport companies which required sound and financially able manufacturing concerns to supply. Such organizations were entering the field and a better quality of product was asked for and supplied, while small and insignificant manufacturers were being forced out. Airplanes improved in 1928 as regards their technical points, especially in construction, workmanship, and detail, and though exhibiting special and minor improvements there was little that was revolutionary in design. It was observed that with many excellent planes manufactured in the United States, the medium priced machines were somewhat inferior especially when compared with the types of craft that had become popular in England where one manufacturer alone had turned out over 300 light airplanes of good workmanship. Better engines especially under 200 horse power were sought and seemed to be available in the United States though there were hardly enough of reliable types manufactured, but there was every prospect that satisfactory developments of the year would be turned out on a quantity basis in 1929.

With the growth of the industry, the personnel question and the facilities and methods for training became serious considerations. There was a lack of competent pilots to operate the increasing number of planes flying on regular routes as well as a dearth of other workers in the aircraft industry. At the end of the year the Aeronautics Branch of the Department of Commerce reported 4690 duly licensed pilots of which 34 were women. Of these 2927 were qualified for transport; 532, limited commercial; 66, industrial; and 1165, private. The Department of Commerce was conducting rigorous examinations for pilots, grouping them according to the class of service for which they were competent and intended.

AIRWAYS AND AIRPORTS. At the end of the year in the United States there were 9016 miles of airway equipped, under construction, or contracted for, for night flying, with 1479 electric or acetylene beacons. There were 259 lighted intermediate fields, 29 radio weather-reporting and communication stations on the Trans-Continental Mail and principal air routes, and telephone service on all other mail routes. It was anticipated by June 30, 1929, 2484 more miles would be added. The United States Weather Bureau had 46 upper-air meteorological stations over the mail system, mostly at airports. The United States at the end of the year had 425 municipal air ports in operation and with an additional 942 under construction or proposed. The city of Detroit during the year voted a \$5,000,000 bond issue to build an air terminal only 3½ miles from the civic centre. The long-

est runway was to be 7400 feet and the shortest, 4400 feet. St. Louis had an airport of 600 acres on which improvements were in progress; while Indianapolis had provided an air terminal on a 1000-acre track seven miles from the city.

In 1928 the San Francisco Airport reported 19,457 flights with 33,545 passengers in aircraft of all models and types. This airport was opened in May, 1927, and in the eight months of that year there were 2895 flights and 4560 passengers, making a grand total of 22,352 flights and 38,105 passengers with a business increase of approximately 600 per cent in the corresponding months of 1928 over those of 1927.

The passenger possibilities of the airplane during the year were recognized by the great railway systems of the United States and joint air-rail routes were developed and tickets sold for through traffic. See RAILWAYS.

AIR MAIL. On May 31 the Postmaster-General announced that effective August 1, the air-mail postage rate would be five cents for the first ounce and 10 cents for each ounce thereafter. Great increase in volume of air mail resulted, as indicated by the carrying in December, 1928, of 537,113 pounds of mail as compared with 165,768 pounds during December, 1927, and 39,350 pounds during December, 1926. The increase in December, 1928, over November, 1928, amounted to 112,648 pounds or 26.5 per cent. On the route from New York to Chicago there were carried 126,179 pieces, and from New York to Atlanta, 20,906 pieces.

NATIONAL SAFETY MEETING. The first Aeronautical Safety Conference to be held in the United States assembled on October 4 in New York City under the joint auspices of the Daniel Guggenheim Fund for the Promotion of Aeronautics and the National Safety Council. The general topics selected for discussion by Harry F. Guggenheim, head of the Foundation, included aircraft, airports, and airways, medical aspects of aeronautics, the public, and flying, passenger safety, flying, and ground personnel. There was also a special session for the consideration of safety in lighter-than-air craft. Col. Charles A. Lindbergh read a paper on "The Requirements and Training for a Commercial Pilot," stating that there should be more complete training for students desiring to become pilots. Notable papers were presented by various engineers, aviators, and leaders of the aviation industry.

INTERNATIONAL CIVIL AÉRONAUTICS CONFERENCE. An International Civil Aeronautics Conference, marked the twenty-fifth anniversary of the first flight by man in a power-driven, heavier-than-air machine, and was held in Washington, December 12, 13, and 14. This conference was convened at the suggestion of President Coolidge and authorized by an Act of Congress. It afforded the first real opportunity since the invention of the airplane for the entire aeronautical world to meet in America and discuss problems in the science and art of aeronautics. There were 30 foreign countries represented by some 125 delegates, in addition to the official delegation from the United States of twelve, including Orville Wright, the Secretary of Commerce, the various assistant secretaries in charge of aeronautics in the different departments, and other prominent individuals in the industry engaged in technical and commercial developments.

The conference began by the delegates attending the International Aeronautics Exhibition in Chicago the week of December 1, and on their return they stopped at Dayton, Ohio, and were present at a civic celebration in honor of the Wright Brothers. On December 12 the conference opened at Washington with an address on the development of aeronautics by President Coolidge. This address was significant in that the President referred to the Wright Brothers specifically and to their effort as "the first extended flight ever made by man in a power-driven machine." The President reviewed the history of man's efforts to fly and his address was heard by not a few of the men who had contributed so extensively to the development of aviation. Plenary sessions were held each morning with leading delegates presenting papers on various subjects and subsessions were held in the afternoons. The various papers presented before the conference were assembled and arranged for publication by the United States Department of Commerce so that they became available for purchase by the general public, forming an interesting summary of the state of aeronautics.

On the second day of the conference the Harmon Trophy was presented to Col. Charles A. Lindbergh for having done the most for aviation in 1927 on the basis of his New York-to-Paris flight. The trophy was presented by M. Flandin, vice president of the International League of Aviators and head of the French delegation. One evening of the conference was devoted to an exhibition of films depicting pioneer flights; a significant collection of this material having been assembled. The delegates, after an inspection of the Research Laboratory of the National Advisory Committee for Aeronautics at Langley Field, proceeded to Norfolk from where, on Monday morning, December 17, they went by motor to Kill Devil Hill, Kitty Hawk Beach, North Carolina, where with appropriate ceremonies a tablet dedicated to mark the spot of the first successful flight of an airplane was placed by the National Aeronautic Association on a rough boulder as a memorial. The bronze plate on this memorial boulder carried the following inscription:

"The first successful flight of an airplane was made from this spot by Orville Wright, Dec. 17, 1903, in a machine designed and built by Wilbur Wright and Orville Wright."

The corner stone of a Federal memorial also was laid with fitting ceremonies.

DANIEL GUGGENHEIM FUND. In June, 1928, the Daniel Guggenheim Fund decided to change its policy transferring emphasis from the work of assisting commercial aviation and stimulating public interest in its development to the consideration of fundamental aeronautical and aerodynamical problems. The Fund soon after its establishment divided its work into three classifications: 1. Scientific research. 2. Commercial development. 3. Public education. During the year each of the five educational institutions to which grants had been given to carry on instruction in aeronautics, was functioning successfully. In addition they were engaged in active research, each one being provided with a wind tunnel and adequate laboratory. The Guggenheim Fund continued during the year in the organization of its Safe Air-

craft Competition with prizes aggregating \$150,000 as outlined in the YEAR BOOK for 1927. This competition was to remain open until October, 1929, and a number of entries were made from Europe as well as from the United States. The list of entries at the close of the year was as follows: From the United States—Curtiss Aeroplane & Motor Co., Garden City, N. Y.; Heraclio Alfaro, Cleveland, Ohio; Charles Ward Hall, New York City; Shroeder-Wentworth Co., Glencoe, Ill.; J. S. McDonnell, Jr., & Associates, Milwaukee, Wis., and Branner & Winkle Aircraft Corporation, New York City. From Europe—The Cierva Autogyro Company, Ltd., London; Handley Page Ltd., London; The Gloster Aircraft Company, Ltd., Cheltenham, England; Vickers, Ltd., London; the De Havilland Aircraft Company, Ltd., England; and Breda, Italy.

In connection with commercial development, the Guggenheim Fund granted an equipment trust loan to finance the purchase of passenger carrying airplanes so as to demonstrate that this activity could be handled by banking organizations and also to promote commercial aviation in passenger service. A loan was granted to the Western Air Express for three multi-engined passenger airplanes flying between Los Angeles and San Francisco. These planes started operation at the end of May. In connection with this service, the Fund sponsored a complete weather reporting service on this airway in co-operation with the United States Department of Commerce, the United States Weather Bureau, and the Pacific Telephone and Telegraph Company. As a result of the elaborate system established reports were communicated from various stations three times daily, and trained meteorologists would forecast flight conditions for the entire area, advising the pilot as to the course to be followed, and keeping him informed while in flight of weather changes.

ORIGINAL WRIGHT AIRPLANE. During the year the long-standing controversy between Orville Wright and the Smithsonian Institution reached a climax in the decision of the surviving inventor to place the original Wright airplane in the wing of the Science Museum, South Kensington, London. This was due to the fact that in Mr. Wright's opinion due recognition of the achievements of himself and his brother had been withheld by the Smithsonian Institution, and that on the Langley plane labels had been placed that in his opinion were false and misleading. Mr. Wright unquestionably had the sympathy of a large number of fellow aviators, and many who followed the controversy believed that his position was justified. In fact during the year, Dr. C. G. Abbot, Secretary of the Smithsonian, issued a pamphlet dealing with relations of that organization with the Wrights and their inventions and invited Mr. Orville Wright to deposit the original plane for perpetual preservation. In the meantime the label on the Langley plane which had been changed several times was again altered, and the Smithsonian apparently withdrew from what many considered a partisan position in favor of its former Secretary, Dr. S. P. Langley. It was indeed rather galling to many Americans interested in aeronautics to learn that on Dec. 17, 1928, the Royal Aeronautical Society in London held a dinner to celebrate the 25th anniversary of the first mechanical flight at the Science Museum at

South Kensington, the dinner being served under the Wright plane.

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AÉROPLANES. See AÉRONAUTICS.

AFGHANISTAN, af-gān'-i-stān'. An independent kingdom of Asia between the parallels 29° and 38° 20' north latitude and 61° and 72° east longitude with a narrow strip extending to 75° east. The estimates of the area vary from 245,000 to 270,000 square miles. The population is estimated at about 12,000,000 although some authorities place it at about half that number. Capital, Kabul, with a population of about 100,000. Other important towns are Kandahar, Herat, and Mazar-i-Sharif. The Afghan is the dominant race, and the chief tribes are the Duranis and the Ghilzais, numbering about 2,200,000. The prevailing languages are Persian and Pushtoo, and the dominant religion is that of Islam.

Little is known of Afghanistan's natural resources as the area has not been carefully surveyed and prospected. The northern part is said to be fairly rich in copper, and lead is found in several sections. A gold mine is being operated at Kandahar under the supervision of a British mining expert, and precious stones, particularly lapis lazuli, are found. Manufacturing of the cottage industry type is carried on throughout the country, making soap, cloth, boots, and certain other articles for local consumption. Carpets are made both for domestic consumption and for export. Until within the last few years Afghanistan has been almost completely isolated from the remainder of the world, but recently, under the leadership of King Amanullah, rapid strides have been made in opening the country to international trade and intercourse. During 1928 it was reported that the construction of a road from Kabul to the British frontier was proceeding very rapidly.

The most convenient means of reaching

Afghanistan from the outside world is through British Indian ports, as the country has no seaport of its own. India's trade with Afghanistan amounts to about \$15,000,000 per annum. Cotton goods, indigo, sugar, hardware, leather, silver, and automobiles are taken by Afghanistan in exchange for carpets, timber, fruits, vegetables, several kinds of nuts, wool, spices, silk, hides, cattle, tobacco, pulse, ghee, asafoetida, and other drugs. Many of the commodities passing from India to Afghanistan are of foreign manufacture, and a good proportion of the import from Afghanistan is designed for reexport to Europe and the United States.

Since 1922 the government of Afghanistan has been a constitutional monarchy with legislative and state assemblies, and a cabinet which is presided over by the king himself. The reigning king in 1928 was Amanullah Khan, who ascended the throne as Amir, when his father was assassinated in 1919. In 1926 he changed his title from Amir to King. The European tour of Afghanistan's king in 1928 brought into world prominence the little-known Eastern kingdom.

HISTORY. During the year the press teemed with accounts of the doings of this small kingdom, both at home and abroad. The Amir, Amanullah, and his Queen, Shah Khanum, made a tour of Europe, which included visits to Italy, France, Great Britain, Germany, and Russia. The royal couple were received with open arms on all sides and with a show of pomp and splendor which reminded many observers of pre-war times. Of course to the cynics there was, to some extent, a reason for all this attention given to the ruler of the little-known Asiatic state. He was pestered with business agents almost every day of his visit for concessions to exploit his kingdom or with contracts to purchase huge quantities of supplies to send home. Amanullah showed inklings of great diplomacy by purchasing a small amount of supplies in each country and affably receiving all requests for concessions and promising to give them his undivided attention as soon as he had enough time, promising, in the meantime, to grant such requests to that applicant who would benefit his country most. After his triumphal tour of Europe, the Amir made state visits to Persia and Turkey. Treaties of amity and good will were signed among the three countries and protocols were agreed to by the terms of which each country agreed to take a conciliatory attitude in case of war between one of the signatory countries and an outside power.

One of the principal results of the Amir's tour was a real attempt to modernize or westernize his country. Under the leadership of the Queen, the emancipation of women was undertaken, and radical steps such as the removal of the veil in public and the education of girls, were inaugurated, not, however, without bitter protests on the part of the leading men of the country. Students were also sent abroad to study methods of engineering, education, and politics in the more forward-looking states of Europe. A vast programme of public works, including roads and bridges, railways, telephones and telegraphs, air development, etc., was initiated almost as soon as the ruler reached home. This, of course, necessitated a large outlay of money, which with the consequent increase of taxation and the exorbitant cost of the king's western tour, kindled fires of unrest and discontent not only with-

in the city of Kabul, but in the outlying districts as well.

Other radical changes involved the abolition of all titles and forms of nobility, the increase of military service from two to three years, and the reduction of the powers of the religious leaders. These reforms were adopted mainly by decree of the Amir, although some of them were participated in by the legislative assembly, which was to be replaced by a National Assembly elected on the basis of universal manhood suffrage. An abortive attempt to introduce the cabinet system of government failed because no one could be found who was strong enough politically to form a cabinet which would enjoy the confidence of the legislative assembly.

The opposition to the westernizing programme of the Amir was deep-rooted and powerful. As noted above, mutterings were heard from the very beginning, and the climax was reached when an order was issued compelling the tribesmen of the hills to become citizens of Afghanistan by going through a regular process of naturalization. This drastic move, as far as the tribesmen were concerned, resulted in an armed revolt, which broke out in November. From the time of its inception down to the closing days of the year, conflicting reports were published in the press concerning its course. A strict censorship was established at Kabul and outside observers were compelled to rely on reports emanating from northern India. The leadership in the revolt was taken by the Shinwari tribe, who undoubtedly had the backing of the Moslem priests who bitterly resented the reduction of their powers and the attempt to institute educational reforms, which might ultimately reduce them to an impotent class.

The first reports of the fighting indicated that the attacks of the tribesmen had been severely repulsed under the leadership of the Amir himself. As the year drew to a close, however, the King's position was not painted in such rosy colors. His capital was cut off from outside communication and several spectacular rescues of foreigners were made by airplane sorties from British India. Considerable damage was done to buildings in the national capital during the attack of the tribesmen. On the last day of the year it was reported in the press, that, although conditions had quieted to some extent, the position of Amanullah was anything but strong. It was reported that in order to save his kingship he was compelled to accede to the wishes of his opponents who had presented a message demanding that no foreign legations should be permitted to remain in Afghanistan, that no more Afghan students should be allowed to go abroad to study, and that those students already sent abroad should be immediately recalled. For the time being, at least, it appeared the new-born forces of westernization were compelled to succumb to the traditional male superiority complex of the East.

AFRICA. The various divisions of Africa in this volume are discussed under their own heads. See articles on the respective countries and territories, including ETHIOPIA; KENYA; EGYPT; MOROCCO; TUNIS; SOUTH AFRICA, UNION OF, etc. See also the articles ANTHROPOLOGY; ARCHAEOLOGY; and EXPLORATION.

AFRICA, CULTURE AND LANGUAGE OF. See PHILLOGY, MODERN.

AGRICULTURAL EXPERIMENT STATIONS. Experiment stations were in operation

in all the States of the United States and in the territories and insular possessions—Alaska, Hawaii, Porto Rico, Guam, and Virgin Islands. The total funds available for their support reached a sum in excess of \$14,000,000. Of this the Federal Government supplied \$3,597,640, including an additional \$480,000 under the Purnell Act of 1925. The remainder came from State appropriations and allotments, fees, sales, etc.

Numerous additions were provided in the form of buildings, lands, and other facilities supplied by the States. The growth of this enterprise is further indicated by the increase in the number of research projects, aggregating nearly 7000, and a working force of approximately 3000 persons. An unusual number of changes occurred in the directorships, affecting no less than 13 States,—Arizona, Indiana, Louisiana, Massachusetts, Michigan, Nebraska, New York, Oklahoma, Pennsylvania, Rhode Island, Texas, Utah, and West Virginia.

Congress made applicable to the Territory of Hawaii a portion of the Federal appropriations for agricultural experiment stations, to begin July 1, 1929. A station was to be established in the College of Agriculture, to be conducted in close coördination with the Federal station in operation in the Islands since 1901.

The North Carolina Experiment Station, the second oldest in the United States, celebrated its semi-centennial April 19, with appropriate exercises and a large representative audience. An experiment station was organized within the Georgia State College of Agriculture.

An interesting development was the establishment of the Giannini Foundation of Agricultural Economics at the University of California, with a contribution of \$1,500,000 by the Bancitaly Corporation of San Francisco in tribute to its founder and president, Mr. A. P. Giannini. The purpose of the foundation is research, and its function in that line is given broad scope. A half-million dollars was designated for the construction of Giannini Hall to house the foundation, completing the agricultural quadrangle at Berkeley. Dr. C. B. Hutchinson was appointed director of the foundation and associate director of the experiment station.

The research professorship in soils at the Cornell College of Agriculture provided by Charles Lathrop Pack, was filled by the appointment of Dr. Lars G. Romell of the Swedish Forest Experiment Station, and research in that field inaugurated.

A new system of lysimeters with a capacity of 149 tanks was installed at the Tennessee Station, embodying the latest ideas for such equipment to study soil and fertilizer problems.

A plant industry building at the Minnesota College of Agriculture costing \$250,000 was dedicated in June, providing enlarged modern facilities for research in agricultural biochemistry. Eight new greenhouse units were provided at that institution for research in plant genetics, plant physiology, plant pathology, and farm crops, equipped with artificial lights so that two generations of cereals or corn may be grown in one year to hasten development of new varieties.

In Mississippi an appropriation of \$100,000 was made for a main station building, and an aggregate of \$513,000 provided for the biennium 1928–29, including the maintenance of five sub-stations.

A tract of 500 acres of abandoned farm land

near Ithaca was given to Cornell University for forestry experiments and as an observation ground for botanists.

The West Indian hurricane in September severely damaged the buildings, orchards, and other experimental work of the stations in Porto Rico and Virgin Islands. The Everglades Station in Florida likewise met with severe injury from the hurricane and the attendant flooding from Lake Okeechobee.

Two publications of special interest relating to research in the social sciences were issued during the year under the direction of the Social Science Research Council. One was a two-volume work on *Research Method and Procedure in Agricultural Economics*, comprising 468 pages. The other was on *Rural Sociological Research* in the United States, comprising 114 pages. Both were issued in mimeographed form, for the assistance of workers in the respective fields.

Prof. I. P. Roberts, long director of the Cornell Experiment Station, and Prof. Willet M. Hays, a leading agronomist and later Assistant Secretary of Agriculture, died during the year. Dr. L. L. Van Slyke, chemist of the New York State Station at Geneva, and Prof. H. H. Wing for 40 years connected with the animal husbandry work at Cornell, retired from active service.

While experiment stations were expanding less rapidly in Europe and other countries, several developments were to be noted. In the United Kingdom a movement was under consideration for the enlargement of agricultural research, following recommendations of the Imperial Agricultural Research Conference in 1927 and meetings in 1928 attended by representatives from various parts of the Empire. The proposals formulated were before the governments. A chain of 12 "illustration stations" was in operation in British Columbia under the supervision of the experimental farm at Agassiz. These are essentially demonstration farms with some experimental work and also the growing of improved seed for sale.

The Australian Commonwealth decided to establish in Queensland one of its chain of research stations, providing £50,000 for capital expenditure and £10,000 annually for maintenance. A series of primary produce experiment stations was authorized in Queensland, to be financed by assessments levied on growers of primary produce, matched by government appropriations. The South Australian Agricultural Education Act of 1927 provided £5000 for the extension of research at the Waite Agricultural Research Institute, with increases bringing the amount up to £15,000 by 1936–37. The Tea Research Institute of Ceylon inaugurated its work with an entomologist, mycologist, and biochemist.

An experiment station for wheat growing was established in Sicily, supported jointly by that country and the Italian Government.

The Sakrand Agricultural Research Station was established at Sind, to deal with problems under the rapid increase of irrigation, including those resulting from the adoption of the Sukkur barrage scheme. The Royal Commission on Agriculture in India recommended the establishment of an Imperial Council on Agricultural Research, with a fund of \$1,750,000.

An agricultural experiment and demonstration station in the interior of China was planned to be opened in connection with the Oberlin-Shansi Memorial School.

Consult also *Report on the Agricultural Experiment Stations*, 1927, U. S. Department of Agriculture, Office of Experiment Stations.

AGRICULTURAL EXTENSION WORK. Coöperative extension work in agriculture and home economics was carried on in the 48 States by the U. S. Department of Agriculture and the State agricultural colleges under the Smith-Lever Extension Act of May 8, 1914, and related Federal and State legislation. Through this system over 4,500,000 instances of the adoption of improved practices on the farms and in the farm homes in 1927 were reported. These were brought about largely by the successful conduct of practical demonstrations to farmers and their families under the direction of the extension agents and through meetings, tours, campaigns, press articles and other activities of the extension forces.

In 35,321 communities extension programmes were worked out with the farming people, which provided plans for more efficient farm production and marketing and for better living conditions. Work relating to farm crops, horticulture, animal husbandry, dairy husbandry, and poultry formed the greater part of the activities of the agricultural agents. Efforts to improve marketing practices dealt with the standardization of farm products, the development of high quality products, and the organization and conduct of coöperative marketing. Assistance in marketing was given to 422,000 farm families and 3434 coöperative associations, which did a business of over \$200,000,000. Information obtained in Kansas on the influence of the age of farmers upon the adoption of improved agricultural practices showed that men between 36 and 55 years of age made as much use of extension information as did younger farmers. And in a general way the same was true of farm women.

The work among the farm women related to clothing, foods, nutrition, house furnishing, home management, health, sanitation, and beautification of home grounds. Over 16,000 community clubs with 307,565 members were in operation.

The work among the farm youth continued to grow in interest and importance. About 620,000 boys and girls were enrolled in 44,188 4-H clubs, of whom 64.4 per cent completed all the work on their projects. They conducted 776,000 demonstrations in the production of crops and livestock and in home improvement, with the assistance of over 60,000 volunteer local leaders. A second national 4-H club camp was held at Washington, D. C., on the grounds of the Department of Agriculture in June, 1928. Over 1000 boys and girls belonging to 4-H clubs in 43 States attended the International Livestock Exposition at Chicago in 1928. Clarence Goecke, of Iowa, 12 years old, won the grand prize for a steer in the open competition and sold his animal for about \$8000. He also took about \$3000 in prizes. Cups offered by Sir Thomas Lipton for the best records in demonstration projects conducted at home by boys and girls were won by Sybil Herring, of Illinois, and John Jackson, of Louisiana.

Emergency activities continued to be features of the extension work in various parts of the United States. Extension agents in the flooded areas of the Mississippi Valley made special efforts to put devastated farms on a self-supporting basis. Assistance was given to the American Red Cross in distributing improved varieties of

cotton, soy beans, and garden seeds. The county forces were strengthened through the use of special Federal funds. An Act of Congress of Jan. 26, 1928, authorized an appropriation for the employment of extension agents in needy counties in that region and the Agricultural Appropriation Act of May 16, 1928, provided \$400,000 for this purpose. Similar service was rendered by extension agents in Vermont following the great flood in that State in October, 1927. County agents, at the request of the governor, made a survey of the agricultural damage caused by the breaking of the St. Francis dam in California in March, 1928, which flooded over 10,000 acres in Ventura County.

Extension workers in the region invaded by the European corn borer continued efforts to impress the farmers with the seriousness of the situation created by the ravages of this pest and at the same time encouraged them to undertake measures for dealing with it as a permanent foe to corn growing. Numerous demonstrations of mechanical control methods were made and much useful information was given at community meetings and through bulletins, posters, and the press.

Demonstration work on Federal reclamation projects in the Western States was continued with the coöperation of the Reclamation Service of the Department of the Interior and the State extension services. Definitely planned programmes relating to crop and animal production and marketing were formulated and put into effect with the aid of the people living on these projects. Special extension work in forestry was continued with Federal funds provided under the Clarke-McNary Act. This included demonstrations and educational work regarding forest planting, woodland management, and forest protection.

The Capper-Ketcham Act of May 22, 1928, provided for the further development of the coöperative agricultural extension work by authorizing the annual appropriation of \$980,000, of which \$20,000 goes to each State and the Territory of Hawaii, beginning with the fiscal year 1929 and for each year thereafter the additional lump sum of \$500,000. At least 80 per cent of the sums appropriated under this act must be spent for the salaries of county extension agents, who "shall be men and women in fair and just proportions," and these funds may be used for the promotion of agricultural trains.

The motion-picture laboratory of the Department of Agriculture had about 420 films. There was a great increase in the distribution and use of these films and it was estimated that they were shown to 10,000,000 people in 1928.

The Office of Exhibits made exhibits at 76 State, interstate, and national fairs.

For the fiscal year beginning July 1, 1928, about \$575,000 was appropriated for the Extension Service in the U. S. Department of Agriculture. Of the \$22,492,800 used in the States and Hawaii, about \$1,346,500 was derived from direct appropriations to the Federal Extension Service and other branches of the Department of Agriculture. \$54,600 for forestry extension work under the Clarke-McNary Act, \$6,182,935 under the terms of the Smith-Lever Act, and \$980,000 under the Capper-Ketcham Act, making the total amount of the Federal contribution \$8,564,050. This was met by approximately \$13,928,600 from sources within the States, including \$5,747,500 to offset Federal funds under the Smith-Lever and Clarke-McNary acts, \$2,298,200 additional State

and college funds, \$4,787,500 from counties, and \$1,095,400 from farm bureaus and miscellaneous sources.

About \$11,225,000 was used for the demonstrations and other activities of the county agricultural agents and their leaders. Much of their work bore on the problems of the farm home, but \$4,250,000 was allotted to the work of the home demonstration agents. About \$1,430,000 was used for special work among boys and girls, about \$4,320,000 for the tasks of the specialists in various branches of agriculture and home economics, \$910,000 for administration and \$265,000 for publications.

On June 30, 1928 there were in the 48 States 2318 white county agricultural agents, 941 home demonstration agents, 145 paid county leaders of boys' and girls' 4-H clubs, and 1004 specialists in the various branches of agriculture and home economics with headquarters at the agricultural colleges. The white agents did much effective work which directly benefited the Negro farmers and their families, but in the Southern States there were also 271 Negro men and women agents. The number of Negro agents was temporarily reduced from the lack of funds for their support in the flooded areas of the Mississippi Valley. The Negro agents not only promoted improved agricultural production and food preservation but did much to better child care, health, and sanitation in the rural homes.

The work in each State was administered by an Extension Director, with numerous State and district leaders. Including the supervisory officers and their assistants 5161 persons trained in agriculture or home economics were employed in the States in 1928. These public agents were assisted by over 240,000 voluntary local leaders in rural communities in the several States.

Farmers' institutes were held in 1927 under official supervision in 11 States. In all, 2260 institutes were conducted with an attendance of 1,163,245.

In Hawaii, extension work was continued by the Federal Experiment Station during 1928. An Act of Congress of May 16, 1928, brought this Territory under the provisions of the Smith-Lever Act and work will hereafter be done in co-operation with the University of Hawaii.

In Porto Rico, extension work was continued by the Insular Bureau of Agriculture. The Federal Experiment Station in the Virgin Islands continued extension work on the Island of St. Thomas.

GREAT BRITAIN. In England and Wales, extension work was continued through the county agricultural councils on plans approved by the Ministry of Agriculture and Fisheries. In 1927, 344 men and women gave their whole time to extension instruction. Of these 49 were agricultural organizers in 53 counties, who did demonstration, lecture, and advisory work and directed the activities of specialists. There were also part-time workers. Instruction was given in agriculture, horticulture, dairying, poultry, farriery, bee-keeping, veterinary science, farm accounting, and manual processes. The universities with agricultural departments and the agricultural colleges had 67 chemists, entomologists, mycologists, dairy bacteriologists, veterinarians, and economists who traveled among the farmers and gave them expert advice. The women's rural institutes, chiefly attended by married women, continued to provide training in practical and tech-

nical subjects, improve village life, and aid local education committees in child-welfare work. The courses and lectures given in connection with the institutes dealt not only with home economics and handicraft but also with English literature, history, citizenship, arithmetic, household accounts, singing, and music.

A subcommittee of the interdepartmental committee of the Ministry of Agriculture and Fisheries and the Board of Education reported in April, 1927, the results of an extended investigation regarding the status of practical education for rural women and girls and made recommendations for the improvement and extension of the facilities for such instruction. It was found that only about 80 women were employed full time in agricultural education in England and Wales as compared with 300 men, and 18 part-time women workers against 176 men. There was a serious lack of facilities for instruction in home economics. Very little was being done for girls from 14 to 16 years of age. The subcommittee recommended that the local education authorities should give increased assistance to such voluntary organizations as women's institutes in the instruction of women in home economics, that more itinerant instruction should be given in dairying, poultry, horticulture, and farm household management, and that scholarships should be provided, permitting women to pass from itinerant courses to farm institutes and to more advanced courses. For girls from 14 to 16 years of age, organized day courses in agriculture, home economics, and general subjects should be provided in every county and correlated with the young farmers' club work, with scholarships for additional instruction.

In Scotland an investigation was made in 1927 under direction of the Board of Agriculture to determine "how far agricultural education is reaching those actually engaged in farming in Scotland and is directly productive of improvement of farm practice." For 25 years extension work had been conducted in Scotland by county organizers and their assistants and by officers of the agricultural colleges at Aberdeen, Edinburgh, and Glasgow. There had been a great change in the attitude of progressive farmers toward this work and they had become very favorable to it as giving them practical benefits. In crop production, use of fertilizers, dairying, and poultry husbandry much improvement in farm practice has taken place. However, agricultural education has not yet reached the mass of farmers, it is said. There was a lack of farm organizations interested in the extension work and therefore too much time had been spent by the extension workers in giving personal service to individual farmers. Local winter courses were regarded as one of the best means for reaching large numbers of farmers.

CANADA. In the several provinces extension work was continued by public agents and through short courses at colleges and boys' and girls' clubs. In Nova Scotia since the reorganization of extension work in May, 1926, by the Ministry of Natural Resources a great expansion of activities has resulted. During 1927 some 14 agricultural representatives (county agents) were employed. They held 643 meetings, aided boys' and girls' clubs, organized school and community fairs, formed livestock shipping associations, and gave poultry demonstrations. With the co-operation of the railroads, demonstration trains

were run, carrying dairy cows, hogs, poultry, models of hen houses, dairy equipment, and exhibits of foods to promote health. Pig, calf, and poultry clubs of boys and girls were carried on in 12 counties. In the Province of Quebec 52 calf-feeding competitions were conducted by boys' and girls' clubs, in some of which the same animal competed three years. A farm boys' week was held for the first time at MacDonald College in July, 1928, at which 21 counties were represented by 250 boys. In Saskatchewan, farm boys' camps have become an important feature of the junior extension work of the university and are conducted in coöperation with agricultural or other rural organizations. Twenty-eight boys' and girls' bacon-pig clubs were conducted in this province in 1927 and the animals were exhibited for prizes at local fairs and an interclub competition at the university. In the winter of 1926-27, the extension department of the university operated an agricultural lecture car in the northern part of the province in connection with the short courses for farmers.

AUSTRALIA. Extension work continued to be carried on under the Departments of Agriculture in the several provinces.

UNION OF SOUTH AFRICA. The division of agricultural education and extension in the Department of Agriculture supervised boys' and girls' clubs, called Prosperity League Clubs, which were organized and managed by teachers in the rural schools.

INDIA. Seven of the 8 provinces of India had a department of agriculture in charge of a director of experimental and demonstration work. Each province was divided into districts consisting of thousands of villages. The work in the districts was supervised by deputy directors or superintendents. A considerable force of itinerant teachers and demonstrators was employed. In some provinces skilled laborers, generally native plowmen, trained on government farms, assisted in demonstrating new methods or implements. Demonstrations on the farmers' own land had generally been most effective. Sometimes small tracts of land at the villages were leased for demonstration purposes. Itinerant demonstration parties carrying improved implements in carts went from village to village and showing how they are operated on the farms, have done good work. Seed of improved varieties of wheat, cotton, and sugar cane were widely distributed. Short courses on special subjects held on government farms were found valuable. A variety of publications in the native language were issued by the agricultural departments.

Demonstration trains were operated in Bengal and Punjab in 1927. There were special cars for crops, animal husbandry, public health, weaving and tanning industries, and coöperative activities. In Punjab "concentration work" was conducted in 56 villages in 1927. In such work the farmers of a village coöperate, using the same improved implements, seeds, and farm practices. The Royal Commission on Agriculture in India, which made a detailed report in 1928 on existing conditions, with recommendations for the improvement of agriculture and the promotion of the welfare of the rural people, favored demonstration work as the best method of inducing rural people to adopt new and improved practices. Institutes for women were begun in Bengal in 1913 and about 80 rural institutes were operating there in 1928. A cen-

tral organization for this work was established in 1925, which publishes a monthly magazine in the native language.

FRANCE. The extension organization under the Ministry of Agriculture included inspectors-general in the eight agricultural regions, directors of agricultural services in the several departments (counties), and professors of agriculture or special subjects. Work in agriculture and home economics for women and girls was continued. Some private organizations, such as the Patriotic League of French Women, held "rural weeks" in the country for the purpose of implanting in girls of all social conditions a love for the country by giving them religious, family, home management, and agricultural training which may be continued at their homes by suitable reading, correspondence courses, etc.

BELGIUM. The Ministry of Agriculture continued to carry on extension work through numerous specialists in agriculture, veterinary medicine, forestry, and farm housekeeping. The League of Belgian Peasants in 1927 had over 110,000 farmers in its parochial agricultural guilds, about 73,000 women and girls in its farm women's league, and about 13,000 members in its 350 boys' sections. Through its publications and a considerable variety of extension activities, the league continued to have large influence on the betterment of agriculture and country life in Belgium.

DENMARK. Extension work continued to be carried on by the Department of Agriculture, the Royal Agricultural Society, and about 120 local farm organizations. Boys' and girls' club work on the American plan was begun in Denmark in 1924 through the coöperation of the Ministry of Agriculture and the International Education Board in the employment of F. P. Lund of the Office of Coöperative Extension Work of the United States Department of Agriculture, who managed the work until 1926. A National Committee for Aiding in the Advancement of Young People in Agricultural Work was then formed by the Ministry of Agriculture, with which the International Education Board continued to coöperate by contributing funds. National leaders in agriculture and home economics were appointed and money was allotted to agricultural societies for the salaries and expenses of itinerant local advisers. A considerable number of different projects for boys and girls were undertaken, as well as winter short courses.

THE NETHERLANDS. The Department of Agriculture continued to carry on extension work through inspectors of agriculture. Advisers in agriculture and horticulture were located in the 11 provinces, together with specialists in dairying, animal and poultry husbandry, and beekeeping.

SWEDEN. Extension work continued to be carried on by over 200 advisers and experts employed by the 26 county agricultural societies, subsidized by the general Government. The young farmers' league, with local groups in the several parishes, continued its activities, which resemble those of boys' and girls' clubs. The league receives contributions from the Government, the general Agricultural Society of Sweden, the Clara Lachman Fund, and the International Education Board. The girls were trained by lectures followed by discussions, practical courses in home economics and weaving, demonstrations, competitions, and study trips.

FINLAND. The Department of Agriculture continued to supervise extension work with men and women, which receives annual subsidies from the Government. These funds are divided among agricultural and home management societies, through which they are distributed to local organizations. Much attention has been given to home industries. Itinerant schools are conducted in which the men are taught carpentry and the women weaving and sewing. There are also more than 100 "practice homes" in which girls are trained by farm housewives.

GERMANY. Experiment clubs for large landowners and for small farmers continued to operate in Saxony, East Prussia, and Wurttemberg. These clubs were first organized in 1921 among large landowners in Saxony. The chamber of agriculture of that province soon undertook to organize clubs among the peasant farmers, with the coöperation of the local agricultural schools. At first all the clubs paid their own expenses, but since 1926 the chambers of agriculture have given contributions from public funds to the small farmers' clubs, and sometimes to those of the large landowners. Each club has a director, who is usually a farmer's son, trained in an agricultural school. Experiments in crop growing, animal feeding, dairying, etc., are conducted on the farms of club members. The farm bookkeeping bureaus continued to keep books for farmers or to organize bookkeeping on the farm and to help the small farmers through special courses, lectures, and sale of forms. Since 1925 the Ministry of Agriculture, Domains, and Forests of the empire has made provision for the practical training of girls through a two-year apprenticeship in accredited farm homes. Such apprenticeship forms a part of the training of farm home teachers. The rural housewives' societies begun in 1898 in East Prussia and united in an Imperial Federation in 1916, had in 1928, 23 provincial associations and 1350 local societies. These societies have lectures and courses in home economics and agriculture, have established markets, and have collaborated with the chambers of agriculture in the improvement of home management, gardening, and poultry work.

CZECHOSLOVAKIA. Through an agricultural broadcasting commission organized in 1925, daily programmes on agricultural subjects, trade, and meteorological reports are regularly broadcast, and also weekly programmes for the farm women.

SWITZERLAND. The Swiss Peasants Union continued to conduct extension work through traveling lecturers. Boys who have completed the compulsory primary school may attend short courses of a few days on agricultural subjects in village schools or winter courses from November to April in primary agricultural schools. Girls may attend 15-day courses in home economics, horticulture, poultry, etc., held at agricultural schools or by itinerant teachers in the villages.

ITALY. A corps of itinerant teachers supported with public funds continued to instruct farmers in intensive methods of agriculture and the use of new crops and improved implements. From 1926 the Federation of Agricultural Consortia, in collaboration with the Italian Radiophone Union, has broadcast week-day programmes on commodity prices, weather forecasts, and agricultural subjects. Itinerant courses in agriculture have been given for three years by a national organization, which operates automobiles equipped for showing motion pictures in the

open air. The films are obtained from the Institute of the Cinematographical Union founded by royal decree in 1926 to collect and distribute agricultural films.

ECUADOR. Since 1924 a board of agriculture under the Ministry of Public Instruction, Agriculture, and Justice has supervised agricultural experimentation and education, including extension work by itinerant officers who give practical instruction and assist in the control of plant and animal diseases and pests. In the summer of 1927 an intensive course in agriculture for the training of extension agents was given.

BRAZIL. On the recommendation of a commission appointed by the Minister of Agriculture, Industry, and Commerce, a law was enacted in 1926 which provided for extension work on the general plan used in the United States. The demonstrations in crop growing carried on by farmers through contracts with the Government were continued.

Consult *Report of the Director of the Extension Service*, 1928, by C. W. Warburton (U. S. Department of Agriculture). *History of Agricultural Extension Work in the United States, 1785-1923*, by A. C. True (U. S. Department of Agriculture, Miscellaneous Publication 15, 1928).

AGRICULTURAL LEGISLATION. The question of attempting to relieve the agricultural situation in the United States by Federal legislation continued to be one of the major political issues in 1928, but at the end of the year the problem was still unsolved. The modified McNary-Haugen Bill to establish a Federal farm board to aid in the orderly marketing of agricultural commodities and in the control and disposition of surpluses, previously referred to (see 1927 YEAR BOOK, *Agricultural Legislation*), passed the Senate on April 12 by a vote of 53 to 23 and the House of Representatives on May 3 by a vote of 204 to 121. On May 23, however, the bill was vetoed by President Coolidge in a vigorous message of disapproval, in which he said in part: "It includes several provisions, which, if unencumbered by objectionable features, would form a basis for a measure that should do much to develop stronger business organizations in agriculture. But the present bill contains not only the so-called equalization fee and other features of the old measure prejudicial, in my opinion, to sound public policy and to agriculture, but also new and highly objectionable provisions. In its entirety it is little less undesirable than the earlier measure."

Among the weaknesses and perils ascribed by the President to the measure included its attempted fixing of prices; the retention of the so-called equalization fee, which he declared to be a sales tax upon the entire community; the widespread bureaucracy which he maintained would be set up; its encouragement to profiteering and wasteful distribution by middlemen; its eventual stimulation of overproduction; and the aid which sales abroad of surplus products at reduced prices would render to foreign competitors of American agriculture and industry.

The veto was considered by the Senate on May 25, and, with 50 votes to override and 31 in support of his position, the measure failed of repassage. The issues presented continued to be warmly discussed during the ensuing presidential campaign, with the platforms and candidates of both parties in apparent sympathy with the general principle of Federal relief. On December 4

in his annual message to Congress, President Coolidge put forward the following suggestions: "The Government should aid in promoting orderly marketing and in handling surpluses clearly due to weather and seasonal conditions. As a beginning there should be created a Federal farm board consisting of able and experienced men empowered to advise producers' associations in establishing central agencies or stabilization corporations to handle surpluses, to seek more economical means of merchandising, and to aid the producer in securing returns according to the quality of his product. A revolving loan fund should be provided for the necessary financing until these agencies shall have developed means of financing their operations through regularly constituted credit institutions."

A bill along these general lines, the principle of which subsequently received the endorsement of the Secretary of Agriculture, was introduced by Senator McNary on December 5. No action was taken by Congress prior to its recess on December 22, however, and at the close of the year there was some uncertainty as to whether legislation would be attempted in the few remaining weeks of the short session ending on Mar. 3, by the newly elected Congress.

Another matter long in controversy in which attempts were once more unsuccessful was that of the disposition of the Government's holdings at Muscle Shoals, Ala. This question had been of special interest to agriculture because of the proposed partial utilization of these holdings in fertilizer production. A measure providing for governmental operation of the Muscle Shoals plant was adopted by the Senate March 13 by a vote of 48 to 25 and by the House of Representatives on May 16 by a vote of 251 to 165. This measure was never signed by the President, however, but failed of enactment by a so-called "pocket veto."

Aside from the annual act making appropriations for the support of the Federal Department of Agriculture discussed elsewhere (see AGRICULTURE, UNITED STATES DEPARTMENT OF), the outstanding legislative accomplishment of 1928 was the passage of the Capper-Ketchum Act providing additional Federal aid for co-operative extension work in agriculture and home economics. This measure was signed by President Coolidge May 22, and was made immediately effective by an initial appropriation of \$980,000 for use during the fiscal year ending June 30, 1929. Under its provisions the 48 States and the Territory of Hawaii each are granted \$20,000 annually for the further development of the extension work with farm men, women, and children originally authorized by the Smith-Lever Act of 1914. This appropriation is increased by \$500,000 per annum in subsequent years, this amount being divided on an allotment basis whereby each State and Hawaii will receive from the fund an amount in proportion to the relation which their respective rural populations bear to the total rural population of the United States, and with the further condition that each makes available from State, Territorial, college, county, local, or individual sources a like amount to be used for the same purposes as the Federal funds. It is expected that these increased appropriations, which it is definitely provided must supplement and not replace existing resources, will permit of a more symmetrical expansion of the extension system, particularly as

regards the hitherto comparatively retarded work in home economics and with the boys' and girls' clubs.

The Standard Container Act of 1928, adopted May 1, 1928, established Federal standards for hampers, round stave baskets, and splint baskets for fruits and vegetables. The manufacture, sale, or use of non-standard containers was prohibited after Nov. 1, 1929. This law supplemented the Standard Container Act of 1916, which fixed standards for grape baskets, berry baskets, and small till baskets, and like it will be administered by the U. S. Department of Agriculture.

Outside the United States the most important legislation of the year was the Agricultural Credits Act of Great Britain approved by the King on August 3. This act was designed to improve the credit facilities of farmers as regards long-term loans for the purchase or improvement of agricultural land and short-term loans for ordinary trading purposes. No loans are to be made by the Government itself, the long-term loans being handled by an authorized agricultural mortgage corporation, and short-term credit being facilitated merely by empowering existing banks to accept as security for loans the farmer's livestock, implements, or crops. These items constitute the tenant farmer's main assets, and loans thereon will now be permitted under an arrangement whereby they become preferred claims, ranking second only to rents and taxes.

Another significant enactment was the New South Wales Primary Products Act. As amended in 1928, this act permits the establishment of marketing boards for most of the primary agricultural commodities by a majority vote of the producers of the commodity concerned. Once constituted, a board is given full control of the commodity, which may be exercised either by direct sales or by a regulation of distribution through existing channels by a system of licensing.

AGRICULTURAL WASTES, UTILIZATION. See AGRICULTURE.

AGRICULTURE. The position of agriculture and the farming people continued to command wide attention. In the United States it entered into the presidential campaign as it never had before. It was regarded by both parties as the most urgent economic problem of the nation, and promises of relief measures were freely made. While generalities were indulged in as previously, the form which these measures should take seemed to be crystallizing around the tariff, cheaper transportation, and the provision of a Federal farm board or commission to work out effective economic remedies. While the latter provision was regarded by some as an attempt to pass on the problem to another agency of supposedly superior wisdom, in detail the plan for such a board outlined by the successful candidate centred in the further development of co-operative marketing and the building up of farmer-owned and farmer-controlled stabilization corporations, with initial advances of capital from the Federal Government. Such a board would assist in the development of clearing houses for agricultural products and adequate warehousing facilities, the elimination of waste in distribution, and the solution of other problems as they arise.

One marked step in advance was the broader

realization that agriculture is not a single industry but an aggregation of specialized industries largely independent in their economic relationships; hence depression in different branches of farming comes from widely different sources and causes. Less faith was felt in the efficacy of any single legislative measure as a general panacea, but realization became more widespread that sound and permanent relief can only come through complete determination of the causes, which will lead to solution through various lines of action. See AGRICULTURAL LEGISLATION.

THE AGRICULTURAL SITUATION. Inquiries into the nature of the agricultural situation, the reason of disparity between that industry and other industries in a period of general prosperity, and closer study of various manifestations and causes of the general problem continued to receive attention by numerous agencies, including chambers of commerce, banking associations, and business interests, as well as economists, publicists, and agricultural experts. The fundamental relation of agriculture and business was emphasized by agencies representing commercial interests; and attention was called to the changes which had taken place in recent years with increased efficiency of agricultural production, the extension of farming to new areas, and the altered relation of American agriculture to world markets.

The United States Chamber of Commerce submitted a referendum on agriculture to its member organizations with seven recommendations, including strict coördination of the land reclamation and reforestation policies of the Federal Government, delay in bringing additional areas into agricultural production at public expense until economically needed, reasonable protection for the branches of agriculture subject to destructive foreign competition, support of co-operative marketing, development and adaptation of agricultural credit facilities, the creation of a Federal farm board to consider the problems peculiar to agriculture, and adequate appropriations for continuing economic and scientific agricultural research.

The complexity of the cause of agricultural depression was brought out at the convention of the American Bankers' Association in October. A basic difficulty was described as a lack of adjustment between what is produced and what is consumed. Not only overproduction but underconsumption is instrumental in producing an unwieldy surplus. This suggests the importance of new uses of products of the soil and avoidance of wastes. Future success of the farmer was declared to lie in improving his labor income, rather than in the unearned increment due to the advance in value of his farm lands. Tax relief through adjustments, basing taxation systems on ability to pay, the recognition that capital values of the farm must reflect earning power rather than inflated prices for real estate, and the transfer of a larger proportion of real estate taxes to other types of taxation were measures strongly stressed.

The question of more equitable farm taxes was receiving increased attention. Various studies have been made by the Federal Department of Agriculture and the experiment stations in the States, often in collaboration with constituted State taxation agencies, with re-

sults which have been received with a high degree of favorable public interest. Certain of these inquiries have demonstrated that taxes on agricultural property are greater in proportion to income than on other property. Relief, where undertaken, has come through widening the base of taxation for schools and road purposes, and tapping new sources of revenue to supplement the general property tax. Since the farmers' tax problem is essentially a State and local one rather than a Federal problem, remedial action must come from those sources.

With reference to the importance of the tariff to agriculture, it was pointed out that one-third of the total agricultural production of the United States meets the products of foreign competitors in our own markets. The Department of Agriculture showed that in the calendar year 1924 no less than 45 per cent of the imports of dutiable articles consisted of essentially competitive agricultural products. The relationship of agriculture to world markets in 1928 was quite different from what it formerly was. Thirty years previous, about 27 per cent of the total value of the agricultural output entered the export trade, as against 15 per cent during recent years; hence in the earlier period agricultural commodities exported had their prices determined in the world market, and consequently less influenced by the tariff. With agricultural exports decreasing in proportion to total exports as well as to total agricultural output, and with imports of agricultural products offering increased competition in the home market, the relation of agriculture to the tariff was materially changed.

Improvement of agriculture, in the opinion of the Secretary of Agriculture, necessitated a combination of individual efficiency, co-operative enterprise, and wise public policy. Many of the fundamental principles that make for success in industry and trade can be applied to agriculture. In his judgment it is necessary to reduce wastes in production and distribution, to expand markets, to find new uses for agricultural products, to organize producers for greater bargaining power, and to invoke government aid in research and in the maintenance or creation of favorable market conditions. Legislation is considered essential for the control of recurring surpluses of farm products, so as to minimize price fluctuations. It is argued that the vital importance of the surplus problem, not only to agriculture but the nation as a whole, makes its solution in some measure a proper governmental responsibility.

A survey by the Department of Agriculture in March, 1928, showed that farm real estate values were only 17 per cent above the pre-war level, compared with 57 per cent above that level in 1921. Taking into account the changes in the purchasing power of the dollar, farm real estate values as a whole were about 20 per cent below the position they held fifteen years before. This decline in values was regarded as an important factor in the depression, especially in the case of those who purchased lands at high values, since real estate comprises more than four-fifths of the average farmer's capital investment and provides the security for most of his borrowings. The decline in values in 1927 was less than in the immediately preceding years.

As a measure of the purchasing power of

farm products in terms of retail prices which the farmers pay, the Department of Agriculture showed that in September the index of retail prices paid by farmers stood at approximately 157 compared with 100 before the World War. Prices received by farmers in that month were 141 per cent of pre-war averages, these two price levels indicating a relative purchasing power of farm products of 90, with 100 representing the base period 1910 to 1914. The corresponding figure for 1921 dropped to 75 and, with some fluctuations, has since shown a general increase. This figure does not take account of farm taxes which are about 250 per cent of the pre-war level, and of farm wages which are 170 per cent of that level.

One remedy for the agricultural situation advanced in some quarters, and with considerable plausibility, was the extension of corporation farming, or farming on a large industrial scale. In advocacy of this, cases were cited in the West where production cost had been reduced by wheat growing on large areas with extensive use of machinery, and of large-scale operations elsewhere in other lines of production. While opportunity exists for expansion of corporation farming under certain conditions, this is not regarded with favor as advantageous to agriculture or as a remedy for agricultural depression. Instead, those who look upon agriculture as a mode of life as well as a business urge that farming is and must continue to be an individualistic business of small units and independent ownership. To that end farms of proper size for the individual farmer are advocated as the aim, and the independence of the farmer thus maintained.

PRODUCTION IN 1928. The year was marked by notable, though not uniform, improvements. The situation with respect to crops was less uneven than in any year since 1920; at least there were fewer distress areas. The gross income from all agricultural products was estimated to be somewhat larger than in the preceding year. The increase in values was due chiefly to improvement in the livestock industries, which prospered conspicuously. Returns from cash grain, hay, tobacco, and potatoes were expected to be smaller than in 1927; but as the Secretary of Agriculture declared, "It is clear that the year will carry forward the story of recovery from the effects of the post-war depression." Many branches of the agricultural industry continued to make gains in the efficiency of production and likewise in the adjustment of supply to demand.

The season was one of relative heavy production despite hampering weather conditions in some areas. The acreage of crops harvested was the largest on record, exceeding that of 1927 by 8,000,000 acres, or 2.4 per cent, the increase being larger than that of any year since 1918. The increase was quite well distributed throughout the country, and was divided among cotton, spring wheat, potatoes, and other leading crops. A decline, representing a shift to more intensive crops, took place in the acreage previously devoted to hay.

The wheat production was the largest since 1919, amounting to over 900,000,000 bushels. The increase was mostly in hard winter and durum wheat. Sharp changes in temperature in the spring destroyed the winter wheat seeded in fully 10,000,000 acres and thinned the stand

on a large additional acreage. Reseeding was complicated by a cold and wet June. The indications were that the world's supply of wheat for the 1928-29 marketing season would be about 5 per cent greater than in the 1927-28 season. Canada, the most important competitor of the United States in wheat, had a record crop. Europe outside of Russia had a crop somewhat larger and of better quality than in 1927. Turkey and northern China had short wheat crops. It was expected that the increase in the world's supply would be considerably offset by an increase in demand, consumption in Europe being stimulated by a relatively low price and by the shortage of the corn crop in southern Europe.

The corn crop of nearly 2,900,000 bushels was the largest crop since 1923. The acreage was a little larger than that harvested in 1927, and the yields averaged slightly better, although in some important corn-raising States the yields were disappointing. The acreage occupied by corn was by far the largest devoted to any single crop, amounting in 1928 to more than 100,000,000 acres, nearly equal to the combined area of the principal cereal crops. A scarcity of corn and other feedstuffs in Europe was a factor in maintaining relatively good prices for corn through the season of 1925 and was likely to be in 1929. In some of the southern European countries the crop was smaller than in 1927, which would leave no export surplus and might require imports to meet domestic requirements. Argentina was the greatest competitor in corn markets, selling not only in Europe, but in the port markets of the United States. Production in that country amounted to 306,000,000 bushels in 1927 compared with a pre-war average of 192,000,000. Most of the corn crop is placed on the market, relatively little being fed or used otherwise locally.

The rye crop was considerably less than in 1927, the estimate being a little less than 42,000,000 bushels compared with 58,164,000 bushels in 1927. The crop was the lowest for many years, except in 1926, when it amounted to 40,795,000 bushels. Russia's rye crop was short, which doubtless would lead to the import of more wheat than during the preceding year. Oat production, which is the largest of any of the cereal grains, was the highest since 1924, and considerably above the average. The crop amounted to nearly one and a half billion bushels compared with 1,182,594,000 bushels in 1927. Barley was a record crop for acreage and production, much above the average in both respects. The crop was estimated at 356,868,000 bushels, or about 91,000,000 bushels more than in 1927. Rice and buckwheat produced average crops, although lower than in 1927, but the flaxseed crop was below the average. Hay (tame) was considerably below the production in 1927, which was a record crop.

The crop of white potatoes was a record one, much above the average. It was estimated at 462,943,000 bushels, or approximately 60,000,000 bushels more than in 1927. The increase was partly due to expansion of acreage and partly to higher yield. The lower price served to give the farm value of the crop a total far below that of 1927. It was expected that fully 15 per cent of the potato crop would be utilized as feed for livestock or wasted. The tobacco crop was well up to the average, with a production

of 1,373,500,000 pounds, a notable increase over 1927. Prices, however, were not as good, which gave the crop a farm value somewhat less than the previous year. Exports of flue-cured tobacco increased 14 per cent over those of the preceding year. The United Kingdom and China, the leading markets for this type of tobacco, took substantially large quantities and the exports of cigarettes to China increased. The increased use of cigarettes and the limited foreign production of similar tobacco had placed the American flue-cured tobacco in a favorable position. Shipments of darker pipe and chewing tobaccos which meet increased foreign competition were reduced.

Cotton was planted on an increased acreage of over 11 per cent compared with the previous year, which made the 1928 area in that crop only 4 per cent below the record acreage of 1926. Losses from the boll weevil, however, were the heaviest since the first few years after that pest spread throughout the Cotton Belt, and weather conditions were unfavorable to the crop. In consequence, the production was estimated at about 14,373,000 bales compared with 17,977,000 bales in 1926. The relatively small crop in 1927 of 12,955,000 bales was held down by acreage reduction, boll weevil, and the Mississippi floods. With the exception of 1925 and 1926, the cotton production of 1928 had rarely been exceeded. Cotton exports in the fiscal year 1927-28 declined 30 per cent in volume, although in value the decline amounted to only 5 per cent. This was a reflection of the higher price prevailing in that year. See also articles on individual crops.

AGRICULTURE IN EUROPE—GREAT BRITAIN. The condition of agriculture in Great Britain continued to be distressed and a source of much discussion. Sir Daniel Hall, writing in *The Journal of the Ministry of Agriculture*, declared the condition to be fully as bad as in the late eighties and the early nineties of the last century. Others referred to the plight of farmers of cultivated land and their laborers as well nigh desperate. The acreage of plowed land in England and Wales in 1928 was reported as less than in 1914 by nearly 900,000 acres, and the trend of grain prices was expected still further to reduce the area, the land being put into grass. Scotland also reports a decline in agriculture and in the agricultural population. On the other hand, some persons close to the industry are inclined to regard the situation as less gloomy than at any time since the War, and that those who have survived the depression may expect greater stability.

RUSSIA. It was announced in June that under a ruling of the Russian Government, necessitated by the shortage of wheat available for export, Moscow bakeries would sell only semidark bread, wheat flour being no longer sold to the public. Although the grain crop in 1928 reached pre-war figures, Soviet Russia's production of marketable grain and that available for export fell far below that previous to the War. This was attributed to the passing of the large estates which before the revolution produced the bulk of Russia's wheat exports. The small individual farms now yield only 11 per cent of grain fit for the market.

ITALY. In Italy agriculture received a great stimulus through the attitude of Premier Mussolini, who announced that the Government's policy henceforth would give first place to agri-

culture. He recognized that Italian farmers had faced exceptional hardships, and declared that he would do everything possible to enhance the well-being of the rural people. Provision was made by the Ministry of National Economy for the granting of loans to Italian farmers on warehouse grain receipts. The general scheme for the loans was about two-thirds the value of the grain at current prices.

INDIA. A Royal Commission on Agriculture in India made a report of some 900 pages during the year, reviewing the situation in its various aspects.

Statistics showing the crops of various countries as far as available are given in the accompanying table.

UTILIZING AGRICULTURAL WASTES. This subject received much attention of late, particularly during the past year. The Federal Department of Agriculture made an extensive survey of the extent of such waste materials and the possibilities of their utilization, and is carrying on research in that field. According to Dr. H. G. Knight, of the Bureau of Chemistry and Soils, "there is an annual production in the United States of about 100,000,000 tons of cornstalks, 115,000,000 tons of cereal straws, 20,000,000 tons of corncobs, 3,000,000 tons of oat hulls, 18,000,000 tons of cotton stalks, 1,800,000 tons of cottonseed hulls, 2,200,000 tons of flax straw, 70,000 tons of peanut hulls, and 500,000 tons of sugar-cane bagasse, making a grand total of 260,570,000 tons of agricultural wastes and residues for which little use has been found." The success thus far attained in converting the residues and surplus of the corn crop into starch, glucose, ethyl alcohol, butyl alcohol, acetone, and other products is encouraging, and manufacture of fibre-board from sugar-cane bagasse is a further example of successful conversion of farm wastes into commercial products on a large scale.

The first carload of wall board made from cornstalks was shipped by a firm from Dubuque, Iowa, in November. Farmers received around \$5 per ton besides the cost of harvesting and baling. Orders were reported for large quantities of the wall board. Copies of the first book to be printed on paper made from cornstalks appeared the latter part of the year. It was entitled *Farm Products in Industry*, and reported an extended survey into the industrial utilization of farm products. An agricultural journal in the Central West printed its 260,000-copy edition of December 15 on paper made from cornstalks.

This matter commanded large attention at the Institute of Chemistry of the American Chemical Society, held at Northwestern University during the summer, and at other meetings. These waste materials were declared to contain an amount of vegetable fibre adequate to supply a large proportion of the requirements for paper stock, and from this purified cellulose the whole range of products based on cellulose compounds can be made. The question of profitable utilization is being investigated from many sides.

AGRICULTURAL COÖPERATION. The United States Department of Agriculture listed 11,400 active farmers' coöperative associations. These in the 1927 marketing season transacted business to the amount of \$2,300,000,000. This figure was less by \$100,000,000 than the total business of a somewhat smaller number of associations in

PRODUCTION BY COUNTRIES IN 1927 AND 1928 OF WHEAT, RYE, OATS, BARLEY, AND MAIZE IN BUSHELS

(International Institute of Agriculture)

AGRICULTURE

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AGRICULTURE

	Wheat		Rye		Oats		Barley		Maize (Corn)	
	1928	1927	1928	1927	1928	1927	1928	1927	1928	1927
United States	902,749,000	878,374,000	41,766,000	58,164,000	1,449,531,000	1,132,594,000	356,869,000	265,882,000	2,839,959,000	2,763,093,000
Canada	500,613,000	440,025,000	14,626,000	14,951,000	464,849,000	467,195,000	134,452,000	96,938,000	4,692,000	4,262,000
Argentina ^a	239,161,000	220,826,000	6,614,000	57,000	52,291,000	66,000,000	14,560,000	18,000,000	306,000,000	321,000,000
Chile	23,285,000	23,285,000			7,000,000	4,000,000	7,000,000	5,000,000		1,400,000
Uruguay	15,397,000	10,234,000			8,293,000	1,400,000	116,000		5,000,000	3,000,000
Austria	12,055,000	11,960,000	19,145,000	20,126,000	29,652,000	30,231,000	11,731,000	10,934,000	3,862,000	4,948,000
Hungary	92,037,000	76,933,000	82,528,000	22,365,000	23,725,000	22,513,000	27,872,000	23,685,000	43,325,000	68,348,000
Czechoslovakia	41,434,000	40,384,000	52,677,000	49,297,000	90,406,000	100,423,000	59,602,000	59,014,000	7,986,000	11,755,000
Belgium	17,778,000	16,276,000	27,676,000	21,354,000	48,343,000	46,102,000	4,694,000	4,169,000		
Danish	50,691,000	47,346,000	9,220,000	8,243,000	7,210,000	7,481,000	15,744,000	14,041,000	18,293,000	20,614,000
Denmark		9,408,000		10,365,000		60,863,000		36,063,000		
Estonia	1,103,000	1,079,000	5,794,000	6,735,000	7,639,000	6,727,000	4,200,000	4,335,000		
Finland	879,000	1,064,000	10,940,000	12,892,000	35,115,000	43,609,000	5,889,000	6,571,000		
France	277,655,000	276,126,000	35,362,000	33,956,000	336,257,000	343,282,000	53,104,000	50,338,000		20,751,000
Germany	126,462,000	120,521,000	303,285,000	269,030,000	426,009,000	437,251,000	134,785,000	125,754,000		
Greece	15,676,000	12,970,000	2,124,000	1,505,000	8,765,000	4,650,000	10,869,000	7,294,000		
Italy	228,506,000	195,808,000	6,535,000	5,937,000	48,413,000	30,720,000	11,024,000	9,443,000	62,285,000	83,998,000
Latvia	2,607,000	2,636,000	9,026,000	10,189,000		12,205,000		5,975,000		
Lithuania	7,275,000	5,273,000	19,035,000	21,188,000	19,704,000	16,741,000	7,363,000	8,630,000		
Luxembourg	798,000	701,000	854,000	354,000	3,131,000	2,763,000	198,000	178,000		
Netherlands	7,569,000	6,156,000	17,047,000	13,489,000	25,353,000	21,144,000	4,547,000	3,416,000		
Norway	676,000	605,000	612,000	606,000	11,608,000	12,665,000	5,600,000	4,672,000		4,012,000
Poland	53,882,000	54,230,000	232,358,000	223,943,000	261,119,000	233,552,000	89,063,000	75,082,000		
Portugal	6,576,000	11,447,000	3,418,000	4,677,000	3,876,000	5,528,000	1,512,000	1,938,000		
Rumania	115,544,000	96,784,000	11,433,000	9,223,000	67,546,000	59,810,000	64,810,000	57,932,000	99,874,000	139,095,000
U. S. R.	859,768,000	745,885,000	789,433,000	939,033,000	1,109,197,000	888,735,000	261,804,000	211,221,000	148,813,000	26,105,000
Spain	133,591,000	144,824,000	24,407,000	26,515,000	37,558,000	39,217,000	82,533,000	12,000,000	23,877,000	
Sweden	5,963,000	5,696,000	1,705,000	1,589,000	2,880,000	2,880,000	565,000	561,000	157,000	154,000
Switzerland						203,000,000		44,000,000		
United Kingdom			8,563,000	5,923,000	26,713,000	20,114,000	20,230,000	14,449,000	81,214,000	83,009,000
Yugo-Slavia	105,361,000	56,568,000						119,000,000	77,000,000	
British India	289,781,000	334,982,000								
Japan	31,186,000	29,221,000								241,000
Algeria	33,987,000	28,323,000			13,779,000	10,607,000	33,505,000	82,485,000	203,000	752,000
Egypt	37,296,000	44,346,000					98,122,000	34,455,000		98,000
Tunis	12,195,000	8,267,000			2,239,000	1,963,000	10,799,000	11,961,000	315,000	7,000,000
Australia	116,737,000	160,852,000					12,631,000	4,134,000	10,000,000	
New Zealand					5,000,000	6,000,000	1,000,000	1,000,000	19,000,000	65,000,000
Union of South Africa	7,275,000	6,644,000			7,036,000	6,080,000	916,000	816,000		

^a The production given for countries of the southern hemisphere is for the crop years 1927-28 and 1926-27.

1925, accounted for by lower prices of products bought and sold.

The largest amount of business done by any one group was by the associations handling grain, amounting to \$680,000,000. The associations marketing dairy products had a total business of \$620,000,000; livestock associations, \$320,000,000; fruit and vegetable associations, \$300,000,000; cotton-marketing associations, \$97,000,000; poultry and egg associations, \$40,000,000; nut-marketing associations, \$14,600,000; tobacco associations, \$22,000,000; the associations handling wool, \$7,000,000; and others selling and buying various products, nearly \$200,000,000. The associations handling dairy products and shipping livestock had made enormous strides since 1915, and those handling grain, fruits, and vegetables had gained from 50 to 100 per cent. The largest business in 1927 was done by California associations, \$226,320,000, more than half of which related to fruit and vegetable associations.

These coöperative organizations included a membership of 3,000,000 members, shareholders, shippers, consignors, and patrons, an increase of 300,000 over 1925. Between 25 and 30 large-scale farmers' coöperative buying associations were listed. These served more than a quarter-million farmers in 1927 and purchased supplies for their patrons to the value of \$60,000,000.

While the progress in the coöperative organization of farmers had not been uniform, and there had been setbacks as well as advances, there had been a remarkable net gain, the value of which is not estimated wholly in terms of business done, membership gained, or savings effected. One important product had been a widespread realization among farmers that success in agriculture required efficient selling as well as efficient production. Coöperative marketing aims to give the farmer an efficient and economical marketing system, while at the same time promoting the adjustment of production to market needs. It is a large influence in the standardization, handling, packing, and processing of farm commodities.

The fourth summer session of the American Institute of Coöperation was held at the University of California in July. Over 100 leaders in the coöperative movement in agriculture, representing 26 States and 6 foreign countries, were registered.

A Division of Agricultural Coöperation was established in the Pan American Union, to advance coöperation and research in the member countries of the Union. See COÖPERATION.

INTERNATIONAL INSTITUTE OF AGRICULTURE. The General Assembly of the Institute was held at the headquarters in Rome. Resolutions were passed looking toward a larger measure of international control and a greater degree of centralization of administration, which were thought to favor greater efficiency in the operation of the Institute. The administration was directed to put greater emphasis on collecting and transmitting by cable statistics on crops and livestock and livestock products, and to promote the use of standard methods in collecting statistics in the various countries. The development of standard index number of prices, production, factors of expense, and net income was provided for. The standard schedule was agreed upon to be used in taking the world census of agriculture in 1930, arrangements for which

have been practically completed. The countries which have promised active participation represent approximately 98 per cent of the agriculture of the world, according to Leon M. Estabrook, director of the census for the Institute.

AGRICULTURE, UNITED STATES DEPARTMENT OF. Dr. William Marion Jardine of Kansas continued to be Secretary of Agriculture during 1928, with Renick W. Dunlap as Assistant Secretary. Lloyd S. Tenney, Chief of the Bureau of Agricultural Economics, was succeeded by Nils A. Olsen. O. E. Reed became Chief of the Bureau of Dairy Industry September 1, 1928. A Plant Quarantine and Control Administration with Dr. C. L. Marlatt as chief, was established July 1, 1928, to bring together the regulatory and control work relating to plants and plant products heretofore conducted by the Federal Horticultural Board and the Bureaus of Entomology and Plant Industry.

On June 30, 1928, the personnel of the department was 22,189, of whom 4,902 were located in Washington. Under the Welch Act the average salary of permanent employees in Washington became \$2292, an increase of \$240. The average salary in the professional and scientific grades was \$3894, an increase of over \$500. During the year ended June 30, 1928, 101 employees were retired on an average annuity of \$807. Between 1921 and 1927 the average annual leave of employees in Washington was 26.9 days and the sick leave was 7.4 days. The new administration building between the existing wings on the department grounds was under construction.

The report of the secretary for 1928 dealt to a considerable extent with the economic problems of agriculture in the United States, including agricultural relief, the tariff, taxation, credit facilities, and coöperative farm organizations.

AGRICULTURAL RELIEF. In the judgment of the Secretary, "the betterment of agriculture necessitates a combination of individual efficiency, coöperative enterprise, and wise public policy." Since the surplus problem is of vital importance to the nation as well as to agriculture, it is proper to make its solution in some measure a governmental responsibility. But the Government need not go further than it has in aiding other economic interests. "No law dealing with this question would be entirely adequate at first." As an initial step it would be well to create a Federal farm board with adequate authority to finance the surpluses through central stabilization corporations provided with a revolving fund. Advisory councils responsible to the farmers should be created. Indirect government assistance can do much. Farmers and business men may coöperate in promoting standardization of agricultural products. The extensive economic data regularly published by the department should be utilized. Facilities should be created for encouraging quality production by cash rewards in prices at the farm.

COÖPERATIVE MARKETING. Coöperative organizations among farmers, which now do a large business, have not only given better financial returns in many cases but have also caused "a widespread realization among farmers that success in agriculture requires efficient selling as well as efficient production." Five or six associations have an annual business approximating \$50,000,000 each and two have passed the \$80,-

000,000 mark. The secretary pointed out that "when markets are depressed by overproduction it is difficult even for the most efficient coöperative organizations to obtain satisfactory prices." Cotton marketing coöperatives have benefited cotton farmers generally by developing a system of payment for cotton on the basis of its grade and staple. Local elevator associations continued to be the chief factors in coöperative marketing among grain farmers. State-wide pools thus far have handled comparatively small quantities of grain. Coöperative terminal-market agencies have greatly strengthened the marketing position of livestock producers. Twenty-five such agencies operating in 19 markets did business in 1927 amounting to \$267,200,000. Producers of dairy products have operated some of the most effective coöperative organizations, which have increased the consumption of milk by advertising and educational campaigns and by insisting on quality production. The movement among fruit and vegetable growers for the federation of local associations and the formation of over-head sales agencies continued to grow.

ROADS. During the fiscal year ended June 30, 1928, 8130 miles of roads and 54 miles of major bridges were completed under the Federal Road Act of Nov. 9, 1921, making a total of 71,074. The total cost of the projects completed during the year was \$205,043,784 of which \$38,056,984 was paid by the Federal Government. The total Federal aid funds apportioned to the States during 12 years was approximately \$836,125,000. With Federal funds of the Bureau of Public Roads 281 miles of forest roads were completed during the fiscal year 1928, making the total 3775.

EXPENDITURES. For the fiscal year 1928 the total expenditure for the regular work of the department was \$47,807,894. Approximately \$11,300,000 was used for research; \$2,400,000 for extension work; \$10,200,000 for eradication or control of plant and animal diseases, insects and other pests; \$13,700,000 for service activities, and \$10,200,000 for regulatory work. Funds amounting to \$8,558,378 were received and deposited in the Treasury, of which \$4,900,922 was from business in the National forests. The other funds administered by the department aggregated \$106,595,052, of which \$90,417,534 was for Federal-aided roads and forest roads and trails; \$3,360,000 for experiment stations under the Hatch, Adams, and Purnell acts; \$5,880,000 for extension work under the Smith-Lever Act; \$1,311,415 for local road and school purposes; and \$1,995,195 for forest purchase and conservation under the Weeks Act.

APPROPRIATIONS. The Appropriation Act of 1928, for the fiscal year ending June 30, 1929, carried \$139,138,793, of which \$83,697,294 was for roads, \$6,805,500 was Forest Service and wild-life conservation funds, partly redistributed among the States, and \$10,980,000 was for payments to the agricultural colleges and experiment stations under the terms of several Federal acts. The amount available for the regular work of the department was \$61,054,239. To this must be added permanent appropriations, including \$4,580,000 for extension work under the Smith-Lever Act, \$3,000,000 for meat inspection, and \$3,430,500 for various forestry purposes, together with \$4,574,000 supplementary funds carried in the Second Deficiency Appropriation Act of May 29, 1928, and \$313,239 available from re-

appropriation of balances. The total available for the department was \$155,037,033.

PUBLICATIONS. For the fiscal year 1928 the department issued 591 new publications, 194 numbers of 8 periodicals, and 585 reprints. The total copies of publications distributed were 33,716,481, of which 13,152,367 were Farmers' Bulletins. The Year Book for 1927 followed the plan adopted the previous year and contained a large number of short articles covering a wide range of subjects, under the title "What's New in Agriculture," together with statistics of crops, livestock, animal products, dairy products, poultry, imports and exports, farm prices, farm income, cost of production, farm wages, etc.

The department library contained about 205,000 volumes. About 15,800 books, pamphlets, and bound volumes were added during 1928, and the current issues of more than 3400 periodicals were received.

RADIO SERVICE. The educational programmes of the department were broadcast in 1928 from 149 stations, which gave over 1000 hours each month to this service. By an arrangement with the National Broadcasting Company, members of the department staff gave important current information to 400,000 farm families each week day except Saturday. The programmes included Aunt Sammy's housekeepers' chat, noontime farm flashes, poultry chats, insect and wild animal allies and enemies, farm news digest, young folks' programme, primer for town farmers, and the United States radio farm school.

AIRCRAFT CARRIER. See NAVAL PROGRESS.

AIRSHIPS. See AERONAUTICS; NAVAL PROGRESS.

ALABAMA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,348,174. The estimated population on July 1, 1928, was 2,573,000. The capital is Montgomery.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Corn	1928	2,650,000	30,475,000	\$38,522,000
	1927	2,800,000	44,800,000	41,216,000
Cotton	1928	3,595,000	1,090,000 *	99,190,000
	1927	3,214,000	1,191,000 *	113,145,000
Hay	1928	637,000	489,000 b	7,703,000
	1927	637,000	533,000 b	7,961,000
Sweet potatoes	1928	70,000	6,510,000	5,859,000
	1927	78,000	7,644,000	6,497,000
Potatoes	1928	38,000	2,812,000	2,890,000
	1927	33,000	2,475,000	3,712,000
Peanuts	1928	210,000	117,600,000 *	4,585,000
	1927	230,000	156,400,000 *	5,318,000
Oats	1928	70,000	1,225,000	919,000
	1927	101,000	1,768,000	1,238,000

* bales, b tons, c pounds.

MINERAL PRODUCTION. The leading mineral products of the State are, in their order, coal, iron ore, cement, and clay products. Coal production, from 21,000.962 short tons in 1926, fell somewhat, to 19,765,866 in 1927; The total value of coal produced was, for 1928, \$48,036,000, and for 1927, \$44,524,000. There was shipped, of iron ore, a total of 6,508,419 long tons in 1927, as against 6,871,412 in 1926; in value, \$12,973,597 for 1927 and \$13,846,656 for 1926. Blast furnace shipments of pig iron attained 2,706,240 long tons for 1927; for 1926 they had been 2,875,534. Their value was, for

1927, \$50,193,057; for 1926, \$58,119,260. Coke production amounted to 4,330,000 short tons in 1927; in 1926 it was 4,779,986 short tons, valued at \$16,823,492. These figures represent the output of by-product ovens; there was in addition a minor production of beehive coke. Of cement there were shipped 7,313,494 barrels in 1927; in 1926, 6,693,900. Shipments were, in value, \$10,615,428 in 1927; \$10,825,421 in 1926. Clay products totaled \$4,181,571 in 1926, \$4,987,896 in 1925. Other mineral products were graphite, sand, gravel, and stone. The aggregate value of mineral production was \$83,709,894 for 1926; for 1925, \$77,139,340.

FINANCE. State expenditures in the year ending September 30, 1927, as reported by the United States Department of Commerce, were: for maintenance and operation of departments, \$16,197,071 (of which \$4,428,505 was for educational purposes); for interest on debt, \$1,673,520; for permanent improvements, \$12,005,632; total, \$29,944,408 (of which \$9,140,645 was for highways, \$741,659 being for maintenance and \$8,398,986 for construction).

Revenues were \$21,999,125, of which property and special taxes provided 38.9 per cent; State departments' earnings, 16.6 per cent; licenses, coal and ore tonnage taxes, and gasoline taxes, 31.6 per cent. Property valuation was \$1,121,993,430; State taxation thereon, \$7,292,957.

Net funded State debt, Sept. 30, 1927, was \$41,554,136.

TRANSPORTATION. The total mileage of railroad line under operation Jan. 1, 1928 was 5185.15. There were built in 1928 123.56 miles of first track.

EDUCATION. Additional school revenues under the State appropriations made in 1927 were expended in various ways, chiefly in the lengthening of the school term in schools in which it had been too brief and for increasing teachers' compensation. State Superintendent R. E. Tidwell, commenting in the *Journal* of the National Education Association drew attention to improved facilities for teacher training in the colleges and normal schools of the State. The school population of Alabama as of Sept. 30, 1928, was put at 886,746, consisting of 557,600 white and 329,146 colored persons. There were enrolled in the public schools of the State in the academic year 1926-27, 412,817 white and 184,438 colored pupils; total, 597,255. Of these, 317,618 white and 172,246 colored, or 489,864, were in the elementary schools. In the high schools were enrolled 95,199 white and 12,192 colored; in all, 107,391 pupils. Expenditure in 1926-27 for public-school education in the State was given as: for whites, \$16,677,147; for colored, \$1,613,239; total, \$18,290,386.

CHARITIES AND CORRECTIONS. The State Board of Administration, constituted according to the code of 1923, acted in 1928 as the central State agency in the field of welfare activities. It included a convict department. The convict leasing system, which had been under its supervision, came to an end in 1928. The institutions of the State included in 1928 the Alabama Reform School for Juvenile Negro Law Breakers; Alabama Vocational School for Girls, at Birmingham; Jefferson Manley Faulkner Soldiers' Home, Mountain Creek; Alabama School of Trades and Industries, Gadsden; Alabama School for the Deaf, Talladega; Bryce Hospital (white insane), Tuscaloosa; Searcy Hospital (colored insane),

Mount Vernon; Partlow State School (mental defectives); State Training School for Girls, Pinson; Alabama Boys' Industrial School, Birmingham; Industrial School for White Blind Men, Birmingham. The two insane hospitals of the State were under one self-perpetuating board of trustees.

POLITICAL AND OTHER EVENTS. A number of important industrial enterprises were established or projected in the course of 1928 at various points in the State. A mill of the International Paper Company, to cost some \$5,000,000 was planned, to occupy a \$100,000 site at Mobile, furnished by local interests. At the Fairfield works of the Tennessee Coal and Iron Company were placed in operation blast furnaces with conveying apparatus to carry the molten metal direct to the steel mill. Arrangements were made for the construction of a number of cotton mills under one large company, the Alabama Mills Company; these to comprise eventually 10 mills with 100,000 spindles in all, situated in towns all save one within a radius of 85 miles of Birmingham. Construction was begun by another company on a \$3,000,000 cotton mill near Talladega, and at Huntsville work on a new mill unit, involving a \$2,300,000 building programme, was started.

At Mobile, the \$10,000,000 public tidewater terminal built by the State Dock Commission was formally opened on June 25. It comprised an extensive system of modern piers and warehouses occupying a site of 550 acres of former marsh land. Railroad development in the State moved forward with the opening in June of the St. Louis and San Francisco system's direct route between Kansas City and Pensacola, via Birmingham. This route used the line graded shortly after the Civil War by General Forrest, from Birmingham to Meridian, Miss., and left for many years unfinished. The State began in the course of the year the establishment of eight of the eleven State farms authorized by the Legislature of 1927, to operate in connection with agricultural high schools. The organization of a School of Medicine providing a four-year course at the State University was started, and Dr. Stuart Graves, former Dean of the Medical School of the University of Louisville, was appointed its head.

The Bridge Bond Act of the legislature of 1927, authorizing a \$5,000,000 bond issue by a State corporation, the Alabama Bridge Corporation, for the construction of some 15 bridges, the cost to be refunded out of toll payments, was sustained March 21 by a decision of the Alabama Supreme Court. The city of Birmingham voted favorably March 26 on the proposal to issue bonds for a programme of grade crossing elimination to be carried out in coöperation with the railroads. With regard to State taxation, a decision of the State Supreme Court, rendered June 14, in a suit brought by the Standard Oil Company of Indiana, held that the gasoline tax act of 1923 had automatically repealed the 1½-cent wholesale gasoline tax of 1919, and thus gave occasion to wholesalers' refund claims of several hundred thousand dollars. The Court held constitutional, May 9, the State tax on cigars and cigarettes. The city of Birmingham, in a special election held April 24, defeated by a vote of 12,441 to 9148 a proposal to permit the exhibition of moving pictures on Sundays.

The abolition of the State convict leasing system was completed at the end of June, by the withdrawal of some 800 convict miners from work in coal mines under State contract, and of about 200 convicts from work in lumber camps; the convicts were transferred to State road work.

ELECTION. At the Democratic primary on May 8 were nominated ten Representatives, a chief justice and two associate justices of the State Supreme Court, three justices of the Court of Appeals, and a president of the State public service commission. As usual, the primary result was tantamount to election, and on November 6 the entire Democratic ticket of the State was elected. In Alabama as in other Southern States, there was strong opposition to the Democratic Presidential candidate, Gov. Alfred E. Smith of New York, but Smith for President and Robinson for Vice President carried the State, though by a majority less than the Democratic majority of 1924. The popular vote of the State for President as finally announced was: Smith (Democratic), 127,796; Hoover (Republican), 120,725.

OFFICERS. Governor, Bibb Graves; Lieutenant-Governor, W. C. Davis; Secretary of State, John M. Brandon; Treasurer, W. B. Allgood; Auditor, Sidney H. Blan; State Superintendent of Education, R. E. Tidwell; Attorney-General, Charles C. McCall; Commissioner of Agriculture and Industries, S. M. Dunwoody.

JUDICIARY. Supreme Court: Chief Justice, John C. Anderson; Associate Justices, William H. Thomas, A. D. Sayre, Ormond Somerville, Lucien D. Gardner, Virgil Bouldin, and Joel B. Brown.

ALABAMA, UNIVERSITY OF. A coeducational State institution for higher learning at University, Ala.; founded in 1831. For the autumn term of 1928 the enrollment was 3001, distributed as follows: arts and science, 1481; engineering, 365; law, 115; medicine, 107; graduate, 65; education, 248; and commerce, 619. The summer school registration was 1873. The faculty for 1928-29 numbered 136, of whom 36 were newly appointed. The productive funds of the University amounted to \$1,857,988, and the income for the year was \$992,406. The library contained about 75,000 volumes, of which 20,000 were government documents. A new commerce building was completed during the year at a cost of \$200,000; and a women's building (for art, music, and home economics), costing \$175,000, and an education building were under construction. President, George H. Denny, Ph.D., LL.D.

ALASKA. A Territory of the United States and its largest possession, forming a jutting land mass at the northwestern extremity of North America. Its total area is 586,400 square miles. The capital is Juneau.

According to the annual report of Gov. George A. Parks, the Territory of Alaska was in a satisfactory economic and industrial condition in the fiscal year 1928, employment was general, and no serious epidemics occurred. The Territory had in 1928, 17 incorporated towns. The assessed property valuation of 16 of these was \$22,690,686.

AGRICULTURE. Cultivation was most active in 1927-28 in the Alaska Railroad territory and in southwestern Alaska. A creamery at Curry, the midpoint of the railroad, promoted dairying activity in the Matanuska and Tanana valleys.

The Matanuska Valley climate, described as similar to that of the Dakotas, encouraged dairy methods such as those there used, including winter housing in barns and the raising of pea and oat silage. Oats were likewise raised as a grain crop. Most of the farmers in the valley, as they lived within five miles of the railroad and were served by wagon and automobile roads, had little transportation difficulty. They had an abundance of summer pasture. It was found essential to heat dairy barns artificially in spells of extreme winter cold. The Tanana Valley began regular dairy shipments only in 1928. It was reported that in southwestern Alaska a number of companies had been formed to raise cattle and sheep, chiefly on the Aleutian Peninsula and Islands. While summer pasture abounded, and while some of the ventures had succeeded, the lack of winter feed and of transportation to markets had limited the development in this section.

MINERAL PRODUCTION. The total mineral production of the territory for the year 1927 was, in value \$14,404,000, as compared with \$17,664,800 for 1926. The decline was chiefly in copper production, but that of gold also fell off. Gold was mined in 1927 to the value of \$5,927,000; in 1926, to that of \$6,707,000. The mine production of copper in 1927 was \$7,250,000, approximately, as compared with \$9,489,000 for 1926. The copper total was affected by lower prices for the metal and was not simply a matter of smaller output. The decrease in gold output occurred entirely in placer production, while the product of the lode mines rose slightly. The copper mines produced, in quantity, 645,000 tons of ore, which yielded 55,343,000 (estimated) pounds of metal, as against 67,631,846 pounds for 1926. The above estimate appeared in the governor's report, but that of the United States Bureau of Mines, slightly higher, was 56,489,214 pounds produced in 1927. The petroleum production of the Katalla field continued in 1927, and that field remained the only producer in the Territory. The yield for 1926 was 7600 barrels. The production of coal, which had been 87,300 short tons, in value \$459,000 for 1926, rose in 1927, attaining for that year 104,300 tons, valued at \$548,000. For the first time in many years Alaska produced in 1927 more than half of the coal that it consumed, the consumption in that year being estimated at 166,000 tons.

FINANCE. There exist in the Territory two systems of public finance, that of the Territory itself and that of the Federal Government; the territorial fiscal system is controlled by the laws of the Alaskan Legislature. The Territorial Treasury showed on January 1, 1927, a cash balance of \$614,010.07; total receipts in the course of the calendar year 1927 were \$1,379,792.20; the disbursements under legislative appropriations totaled \$1,221,743.68. There remained at the end of the year a cash balance of \$772,058.59.

The Federal Government revenue receipts in the Territory, derived from sale of business and trade licenses outside incorporated towns, and credited to the Alaska Fund, amounted in the fiscal year 1928 to \$161,138.46, and showed a sharp decrease from \$256,712.51, the corresponding total for the fiscal year 1927. The Fund was available, in the proportion of 65 per cent for road and trail construction and repair, 25 per cent for schools (both activities outside incor-

porated towns), and 10 per cent for indigent relief.

TRANSPORTATION. *Alaska Railroad.* The Government, which owns and operates the railroad system, has considerably reduced the yearly operating deficit. This deficit in the fiscal year 1927 ran for the first time below \$1,000,000, and for 1928 the deficit was 840,890. There was an increase of 17.7 per cent in the commercial freight tonnage, to 96,977 tons. The number of paying passengers carried decreased slightly. Revenue from transportation was \$1,551,723.86. Of nearly \$12,000,000 of construction estimated in 1925 as necessary to complete the railroad as projected, there had been spent up to the end of the fiscal year 1928 but \$2,435,784. Additions were made in the course of the year to the gasoline-driven equipment for the railroad.

Roads and Trails. The Alaska Roads Commission reported at the end of the fiscal year 1928 that it had 10,754 miles of roads and trails under supervision. Of these, 1623 miles were wagon roads. There were constructed during the year 67¼ miles of wagon road, 171½ miles of trail, 96 miles of shed road, and 32 shelter cabins. In the same period the Forest Service expended \$573,118 for roads and trails in the 20,000,000 acres of National forests situated within the Territory. In Mount McKinley National Park 34 miles of main park road were prepared to be put into service in the autumn of 1928.

Aviation. Under a territorial appropriation out of road funds there had been built up to the middle of 1928 no less than 58 landing places for airplanes. Winter mail service by airplane from Nenana to Nome and intermediate points was subsidized by act of the Legislature, and operated through the winter of 1927-28.

Rivers and Harbors. Serving the Yukon and Tanana River route, the steam vessel *Alice*, owned by the Alaska Railroad, was remodeled to increase passenger capacity. The improvement of Wrangell Narrows, carried out by engineers of the United States Army, at a cost of \$449,154, was completed in June, 1928.

EDUCATION. The system of Territorial Schools, directed by a Commissioner of Education at Juneau, and likewise the Agricultural College and School of Mines, were maintained during the biennium of 1927-28 by a Territorial legislative appropriation of \$1,001,350. A supplementary system of schools sustained by money from the Federal Alaska Fund (see *Finance* above) was in operation, but for better administrative results this system was also in charge of the Commissioner of Education for the Territory. About \$50,000 was expended in 1928 on the last-named group of schools. In all there were maintained 16 high schools and 90 elementary schools; teachers numbered 235; pupils, 4828. Seven night schools operated in 1928, with an enrollment of 205 students, chiefly illiterate men. The Agricultural College and School of Mines opened the academic year 1927-28 with 175 enrolled students. Special training of Eskimo boys in reindeer husbandry was undertaken, instructors being trained at the College, as the incidental instruction given previously by the ordinary school teachers in this subject to the young Eskimos had been found not wholly satisfactory.

INDUSTRIES. *Fisheries.* Coming after a disappointing year in 1927, the early part of 1928 brought in the fishing industries unexpectedly

large yields. Of the salmon catch about 93 per cent was canned. The total production of the fisheries in 1927 was \$40,163,300, as against \$54,669,882 for 1926. The salmon catch as usual formed the major part of the product, but was much diminished. In spite of this diminution, the industry of mild-curing salmon made an increase, employing in 1927, 1769 persons and producing 8804 tierces valued at \$1,570,841. A survey of the declining herring industry was in progress in 1928. The halibut catch of 1927 was large, being 34,491,383 pounds, in value \$3,805,088. There were employed in commercial fisheries in 1927, 28,872 persons.

Seals. The estimated number of seals on the Pribilof Islands estimated at 808,870 in 1927 was reported then to be twice the number in 1917. There were taken in that year 24,942 fur seal skins. Of these, 20,315, sold at auction, fetched \$718,801.

Fur and Game. An investigation of the causes of serious losses among the animals of fur farmers was in progress in 1928. Federal legislation made it possible in that year for fur farmers to lease from the Federal Government entire islands, up to an area of 30 square miles; such islands, on account of their natural boundaries, were in particular demand for fur farming. The Pribilof Islands yielded in 1927, in addition to seals, a considerable number of blue and of white fox pelts.

Reindeer. The appointment of a Federal Reindeer Supervisor, under the Department of Education, was authorized, with a view to continuing and improving the Federal supervision of the reindeer industry conducted by the natives. (See also *Education* above).

COAST AND GEODETIC SURVEY. The surveying and charting of the Alaska coast was continued in 1928. A magnetic observatory and seismological station was maintained at Sitka.

ALBANIA, ăl-bă'ni-ă. A geographical district in the Balkans consisting of the former Turkish provinces of Scutari and Yanina and parts of the Turkish vilayets of Monastir and Kassova. The boundaries were fixed as a result of the work of an international commission appointed in 1922, which did not complete its labors, however, until 1925. The probable area of the country is estimated at about 17,347 square miles; the population is estimated at 831,877, of whom 584,675 were Mohammedan, 158,215 Greek Catholic, and 88,987 Roman Catholic. The country is divided into eight provinces named after the chief towns. The latter, with their estimated populations are as follows: Tirana, 12,000; Scutari, 32,000; Korytza, 24,000; Elbasan, 13,000; Argyrocastro, 12,000; Berat, 8500; Valona, 6500; and Durazzo, 5000. The principal race groups are the Ghegs in the north and the Josks in the south. Agriculture is very primitive, and large tracts of land remain uncultivated. The chief products are: Tobacco, wool, olive oil, corn, and cattle. The mineral wealth is reputed to be considerable although almost entirely undeveloped. Drillings for oil in recent years seem to indicate its presence in commercial quantities. There are also valuable forests. A coarse native cloth is manufactured from wool, but for the most part such manufactures as exist in the country pertain to the working up of agricultural products.

Albania has been handicapped by natural conditions—mountains, primitive roads, lack of

railroads, and undeveloped natural resources. As an agricultural country, with practically no native industries, it is entirely dependent on imports of manufactured goods. The latest returns for commerce, those for the calendar year 1926, showed imports of \$4,800,141 and exports of \$2,309,649, leaving an unfavorable trade balance of \$2,490,492. The chief articles of import for 1926 were: Cotton manufactures, woolen goods, sugar, rice, coffee, machinery, kerosene, gasoline, and leather. The chief articles of export for the same year were: Cheese, grains, eggs, skins and hides, lambs and wool. Italy buys most of the exports and supplies most of the imports. The budget for 1926-27 practically balanced at 23,000,000 gold francs, while the estimates for 1927-28 showed a revenue of 29,000,000 gold francs and an expenditure of 26,000,000 gold francs.

Although Albania's independence was proclaimed and recognized as early as 1912, the country remained in a state of virtual anarchy for the next few years. It was declared an independent country again by the general in charge of the Italian forces in the country on June 3, 1917, and a provisional government was set up at Durazzo. Under the constitution adopted in 1925 there is a parliament with 54 members elected every four years and a senate of 18 members, 12 elected and six nominated. The president was elected for seven years by the house and senate sitting as a national assembly. During 1928 the president, Ahmed Zogu, was proclaimed a monarch.

HISTORY. The outstanding event in the history of Albania during the year was undoubtedly the coronation of Ahmed Bey Zogu, President of the Republic, as Scanderbeg III, King of the Albanians, on September 1. The event was preceded by a general election in the summer, which lasted for two months, the general purpose of which was understood by almost everybody to be the selection of a group of legislators who would be friendly to the aspirations of the president and would pave the way for his kingship by amending the constitution to make it possible. This event was forecast for months and was known to have the tacit approval of Mussolini, who, after all, was the real ruler of Albania, particularly when the treaty of Tirana of 1926 was taken into consideration. Curiously enough, the countries who were bitterly opposed to Mussolini's machinations in Albania made no formal protest against the actions of the National Assembly in Albania.

Scanderbeg III, a comparatively young man of 33, had had a very checkered and more or less unscrupulous career. After a good education he succeeded his father to the headship of the Mati tribe, the most powerful in northern Albania. As Albania emerged as a recreated state at the close of the World War, he gradually became the most important man in the country and was known as an anti-Italian. When Fan Noli carried out his successful *coup-de-force* in 1924, Zogu was compelled to flee the country to Jugo-Slavia, where, as a pro-Serb, he plotted his return to his native land. The Nationalist Government of Fan Noli was a complete failure, and within six months, Zogu was back in Albania, where he was received with open arms and hailed as a savior. He immediately convened a very shadowy convention and had

himself elected president for a term of seven years. He himself controlled the legislature, such as it was, by his control over the treasury, and, in his capacity of premier, was virtually dictator of the country. He then turned his face definitely westward toward Italy, and came to be considered a mere tool of Mussolini. Needless to say the Serbs in particular, and the Jugo-Slavians in general hated him because he ruthlessly used them to get back into power and then turned his eyes toward the country considered by Jugo-Slavia as her greatest enemy, Italy. In the last few years, Zogu had bound his country inseparably to Italy, by accepting loans, by making treaties of alliance, and the establishment of a financial system backed by Italian capital. The rule of the new king was shortly recognized by most of the important powers of the world, including the United States.

Scanderbeg's position was anything but secure. In many quarters of his kingdom, discontent was rife and fear was expressed for the strong central government which he planned to establish. The Albanians are peculiar people. They are unaccustomed to render allegiance to any central authority and look to the tribal leaders for their orders and are imbued with such fanatical local prejudices that the country is the home of one huge vendetta. It was not considered to help Scanderbeg's future any that he was a member of the hated Moslem religion, while most of his subjects are Catholics or Greek Orthodox Christians. In a land of vendetta, his many executions, hundreds of which had occurred since his coronation, must have stirred feelings of revenge in the hearts of many of his subjects, which must, sooner or later, result either in his assassination or the driving of his régime from power.

ALBERTA, ál-bûr'tà. A northwestern province of Canada, formerly consisting of a large part of the Northwest Territories; bounded on the east by Saskatchewan, on the west by British Columbia, and on the south by the United States. Area, 255,285 square miles; population (1926), 607,584, as compared with 496,442 in 1916. The rural population in 1926 numbered 374,614, and the urban, 232,970. Chief towns with their populations according to the census of 1926; Calgary, 63,513; Edmonton, 65,163; Lethbridge, 10,893; and Medicine Hat, 9536. The movement of population in 1926 was: Births, 14,455; deaths, 5156; marriages 4498.

The chief occupation of the province is agriculture, but there are valuable deposits of coal, natural gas, and petroleum. Besides the raising of grain, livestock and dairying are the chief industries. The acreage under crop and the actual production of grains in 1927 were as follows: Wheat 6,251,000 acres, 171,277,400 bushels; oats, 2,248,000 acres, 101,160,000 bushels; barley, 400,000 acres, 12,000,000 bushels; rye, 156,500 acres, 3,130,000 bushels; flax, 12,600 acres, 201,600 bushels; peas, 1350 acres, 25,000 bushels; beans, 270 acres, 4100 bushels; mixed grains, 15,400 acres, 614,000 bushels. According to estimates, Alberta has 14 per cent of the coal reserve of the world. The 1926 production was 6,503,705 tons valued at \$20,886,103. In the same year the value of the natural gas output was \$3,019,221. The production of petroleum was 216,050 barrels valued at \$902,504. The total value

of all mineral production in 1927 was \$29,375,040. Coal production in 1928 was 7,250,000 tons, a high record.

The executive power is nominally vested in a lieutenant-governor appointed by the Dominion Government, but it actually rests in an executive council or cabinet. Legislative power is in the assembly, which is elected by direct vote including woman's suffrage. Of the 59 members in the legislature, 43 were United Farmers of Alberta, 7 Liberals, 4 Labor, and 4 Conservatives. Alberta is represented in the Dominion Government at Ottawa by 6 members in the Senate and 16 in the House of Commons. Lieutenant-Governor in 1928, Dr. W. Egbert; Prime Minister, John E. Brownlee.

ALBRIGHT ART GALLERY. See ART MUSEUMS.

ALCOHOL. INDUSTRIAL. See CHEMISTRY, INDUSTRIAL: PROHIBITION.

ALCOHOLISM. See LEAGUE OF NATIONS.

ALFALFA. The yield of alfalfa hay for the United States in 1928 was estimated by the Department of Agriculture at 29,054,000 tons, as compared with 31,823,000 tons in 1927. The decrease in yield was mainly due to a reduction in acreage from 11,401,000 acres in 1927 to 11,040,000 acres in 1928, resulting largely from winterkilling in some sections and from disease attacks in others. The largest reduction in acreage occurred in Nebraska and Kansas, but the percentage reduction was greater in some of the States north of the Ohio River, where winterkilling in some sections had been quite severe. The States leading in yield in 1928 were California, producing 4,246,000 tons, Nebraska 2,633,000 tons, and Kansas 2,250,000 tons, the average yield per acre for these States being approximately 4, 2.28 and 2.7 tons respectively. The other States producing over 1,000,000 tons, mentioned in decreasing order of yield, were Idaho, Colorado, Montana, Minnesota, Utah, Michigan, and South Dakota.

The production of alfalfa seed in 1928, according to estimates by the Department of Agriculture, was 591,500 bushels, while the year before it reached 851,400 bushels and, in 1926, 960,000 bushels. Crop injury, due in some sections to grasshoppers, frost, and other causes, reduced the acreage cut for seed, and the average yield per acre for the 17 States reporting was only 2.51 bushels as compared with 3.59 bushels the year before. The reduction in yield was especially marked in Idaho, Utah, Kansas, and most of the southwestern producing area. Utah, the leading State in yield and which produced 265,000 bushels in 1927, yielded only 124,000 bushels, being followed by Arizona with 99,000 bushels, Nebraska with 75,400 bushels, and Idaho, usually ranking second and producing 180,000 bushels in 1927, with 51,000 bushels. Nebraska, South Dakota, and Montana were the only States recording significant increases in yield over the preceding year. The average farm price on December 1 in the States reporting was \$11.90 per bushel, while on the corresponding date the year before it was \$9.07. The difference in average farm prices was marked, ranging from \$8.75 per bushel in Texas to \$19.00 and \$19.60 in North Dakota and Minnesota respectively.

The imports of alfalfa seed for the fiscal year ended June 30, 1928, amounted to only 782,300 pounds as compared with 5,133,700 pounds for the preceding fiscal period. A service for the

verification of the origin of alfalfa seed was inaugurated by the Department of Agriculture which seems widely favored among dealers. In 1927, 17,000,000 pounds of seed were verified as to origin and it was estimated that in 1928 certificates of origin covering over 40,000,000 pounds of seed would be issued. In some sections of the alfalfa-seed producing area official field inspection and registration and seed certification is practiced.

A variety of alfalfa introduced by the Department of Agriculture and named Ladak after the province in northern India from which it came was reported as comparing very favorably in winter resistance, yielding capacity, and quality with Grimm. Northern Common, and other hardy varieties.

ALGERIA. A colony of France forming politically a part of France itself, situated in northern Africa. It comprises the two great divisions of Northern and Southern Algeria which in turn are divided as follows: Northern Algeria into the departments of Algiers, Oran, and Constantine; Southern Algeria into the territories of Ain Sefra, Ghardaia, Touggourt, and the Oases of Sahara. The total area, including the Algerian desert, is estimated at 1,069,000 square miles: population, including military forces, according to the census of Mar. 7, 1926, 6,064,865, of whom 5,552,640 were in Northern Algeria. The Europeans numbered 872,439. All but a small fraction of the population was in the towns and cities. Chief towns with their populations for 1926: Algiers, 226,218; Oran, 150,301; Constantine, 93,733 (these three being respectively the capitals of the provinces of the same name); Bône, 51,895; Tlemcen, 26,758; Sidi-bel-Abbes, 43,148; Blida, 24,758; Tizi Ouzon, 2944; Philippeville, 20,242; and Sétif, 26,677.

The race groups in the native population are principally Arabs, Berbers, and Kabyles, and the prevailing religion is Mohammedanism. The chief Christian church is the Roman Catholic which maintains an archbishop and two bishops. In 1926 there were 1302 primary and infant schools, public and private, with 110,031 pupils. There were also 17 establishments for secondary education with 9773 students. For higher education there is a university at Algiers which had 1664 students in the fall of 1926, and there are special schools of commerce, hydrography, agriculture, and the fine arts. There are also higher Moslem schools at Algiers, Constantine, and Tlemcen.

PRODUCTION. The country is dependent primarily upon agriculture. By far the most important crops are the cereals, followed by grapes. Climatic conditions are uncertain, there being a large surplus of cereals for export some years and in other years local supplies must be supplemented by imports. The drought of 1926 resulted in poor crops generally and, for the same reason, the yields in 1927, though generally larger, were for the most part below normal. Crops of cereals estimated at 1,693,000 metric tons in 1927, were far short of the average crop of 2,200,000 tons. Wheat production placed at 768,000 tons, was sufficiently large for domestic consumption, and compares favorably with the average of 672,000 tons for the years 1920 to 1926. The barley yield, normally the largest of all cereals because it requires less rainfall, was considered satisfactory at an estimated 766,-

000 tons. As a wine-producing country, Algeria, with an average yield over a five-year period of 9,764,000 hectolitres, ranks after France, Italy, and Spain, and is one of the foremost exporting countries. Efforts to develop cotton growing, extending over a great number of years, have met with slight success. The production of olive oil, estimated at 27,500 metric tons, was more than double that of 1926. The tobacco crop attained the same production figure as did the olive oil. While the extent of Algeria's mineral wealth has not yet been fully estimated, this branch of industry has grown largely in importance. Phosphates and iron ore are the most important products. The output of phosphates reached the high total of 847,000 metric tons in 1927; that of iron ore, at 2,029,000 metric tons, was the largest since the war.

COMMERCE. On a dollar basis, trade in 1927 was the highest in five years. Total imports were valued at 4,836,000,000 francs (\$136,857,000), as against 4,119,000,000 francs (\$130,349,000) in 1926. The value of exports in 1927 was 3,521,000,000 francs (\$136,049,000), as compared with 4,015,000,000 francs (\$127,057,000) during the previous year. The principal imports in 1927 were sugar, petroleum, paper, clothing, and automobiles; the principal exports, sheep, phosphates, eggs, wheat, figs, tobacco, cigarettes, and wines.

FINANCE. Receipts from direct taxation and sundry payments in 1927 totaled 134,115,000 francs, as against 103,020,000 francs in 1926. Notwithstanding the ill effects of poor crops, other net tax returns under the ordinary budget, amounting to 509,926,000 francs, were well above estimates and exceeded the 1926 returns by more than 20 per cent. Extraordinary budget returns, comprising the match tax, were lower at 4,935,000 francs. Receipts under the supplementary budget for post, telegraph, and telephone services increased to 63,735,000 francs. The ordinary budget for 1928 provided for revenues of 720,060,006 francs and expenditures of 719,881,836 francs. The extraordinary budget for the same year balanced at 209,713,120 francs.

COMMUNICATIONS. Transportation facilities is a subject of primary importance, particularly in view of the vastness of the country. As the railways are inadequate, the highways provide the only means of reaching many localities. Accordingly, their upkeep and the creation of new roads form one of the major items of the budget. Expenditures on national highways, which in 1927 extended 3325 miles, and on local and departmental roads and paths, totaling another 12,698 miles, were 46,400,000 francs. There has been an encouraging increase in recent years in the length of the railways, which in 1928 totaled 2716 miles, of which more than half are State owned. Receipts during 1927 amounted to 294,000,000 francs. There has also been a very satisfactory increase in the equipment and use of the telephone.

GOVERNMENT. The central executive authority of the local government is the governor-general who directs all the services with the exception of the non-Mussulman departments of public instruction, justice, worship, and the treasury, which are each under a separate ministry. The governor-general, with the minister of the interior, prepares the budget which is voted by the so-called Financial Delegations and by the Superior Council. The colony sends to the home

parliament one senator and two deputies from each of the three departments. The parliament at Paris has the sole right to legislate for Algeria. Governor-General in 1928, Pierre L. Bordes, appointed in November, 1927.

ALLEGHENY COLLEGE. A coeducational institution of higher learning at Meadville, Pa.; non-sectarian in policy but under the patronage of the Methodist Episcopal Church; founded in 1815. The enrollment for the autumn of 1928 was 614, distributed as follows: seniors, 93; juniors, 132; sophomores, 170; freshmen, 219. The registration in the 1928 summer session was 143. The faculty in the autumn of 1928 numbered 40. The productive funds of the college amounted to \$1,400,000 and the income for the year 1927-28 was \$367,234. The library contained 71,000 volumes. Two new buildings were in course of erection in 1928: Arter Hall, a recitation building, the gift of the late Frank A. Arter of Cleveland, Ohio; and Caffisch Memorial Hall, a freshman dormitory for men, to cost \$210,000, the gift of Mrs. Margaret E. Caffisch, Union City, Pa. President, James A. Beebe, D.D., LL.D.

ALLIANCE FRANÇAISE, FÉDÉRATION DE L'. An association of clubs and groups formed for the purpose of encouraging and furthering the study and cultivation of the French language, literature, art, and history in the United States. It was established in 1902, and in 1928 comprised over 250 local branches, including French Alliances, affiliated societies, and French clubs in universities, colleges, and schools. Eight new groups were added to the Fédération during 1928. Each year the Alliance Française brings from France one or more lecturers who are prepared to speak before all the affiliated societies and clubs wishing to hear them. It also organizes lecture tours for distinguished French travelers, and for French lecturers who live in America, and assists in organizing courses in the French language and literature in co-operation with the leading universities, and encourages its groups to engage in dramatic performances and debates in French. The official lecturers from France during the year 1927-28 were M. André Maurois, well-known writer, author of *Ariel*, or *the Life of Shelley*; *Disraeli*; and many other books which had been translated into English; also Madame Aline Caro-Delvaile, lecturer on art and literature; M. Raymond Lange, general secretary of *L'Intransigeant*; and Dr. Julien J. Champenois. The Assemblée Générale of the Fédération, attended by representatives of the various groups, was held at the Hotel Plaza, New York City, on April 14, 1928. The official organs of the Fédération are *L'Echo de la Fédération* and the *Bulletin Officiel*. Headquarters are at 32 Nassau Street, New York City. Officers for the year 1928 were Frank D. Pavey, president; William Nelson Cromwell, general vice president; Albert Blum, president of the executive committee; James N. B. Hill, treasurer; and Felix Weill, general secretary.

ALSACE-LORRAINE, *al'zas'lór'an'.* The provinces taken from France by Germany after the Franco-Prussian War of 1870-71 and restored to France after the armistice of Nov. 11, 1918; constituting at present the three French departments of Bas-Rhin, Haut-Rhin, and Moselle. Total area, 5605 square miles, total population in 1921, 1,709,749. The area and population are distributed among the three depart-

nents as follows: Bas-Rhin (formerly Lower Alsace), 1848 square miles and 651,686 inhabitants; Haut-Rhin (formerly Upper Alsace), 1354 square miles, and 468,943 inhabitants; Moselle (formerly Lorraine), 2403 square miles and 589,120 inhabitants. Alsace-Lorraine contains the only petroleum fields of commercial importance in France, but supplies only about 10 per cent of the total consumption. Iron ore is mined in large quantities. Potash production was affected favorably by the agreement between the Alsatian and German mines for a division of the world market. In January, 1926, the autonomy of the port of Strassburg was established.

ALSATIAN QUESTION. See FRANCE under *History*.

ALUMINUM. According to the U. S. Bureau of Mines, new aluminum produced in the United States during 1927 was valued at \$39,266,000, or 4 per cent more than the 1926 production, which amounted to \$37,583,000. The value of the secondary aluminum produced was placed at \$21,844,000, as compared with a production valued at \$23,868,000 in 1926. The domestic price of new aluminum ingot, 99 per cent pure, was 27 cents during the first half of 1927, but the Aluminum Company of America lowered its price to 26 cents which held until Oct. 20, 1927, when the price was further cut to 25 cents a pound, and remained at that figure at the end of the year, which, taken into consideration in connection with prices of outside metal for the year, gave an average price in 1927 of \$0.254 a pound.

Imports of aluminum into the United States in 1927, including crude aluminum, plates, sheets, wire, etc., were valued at \$13,316,986, as compared with a valuation of \$16,421,905 or 1926 imports of this class. The 1927 imports of the above class, together with manufactures of aluminum, including aluminum leaf, kitchen utensils, and other manufactures of aluminum, valued at \$884,992, brought the total value of imports up to \$14,201,978 as compared with \$16,779,377 in 1926. Imports of plates, sheets, bars, etc., in 1927 increased 215 per cent in quantity and "other manufactures" of aluminum increased 232 per cent in value, as compared with imports of similar products in 1926. Exports in 1927 of aluminum amounted to \$6,407,421 as compared with \$4,452,303 in 1926. Exports of aluminum ingots, scrap, and alloys in 1927 increased 501 per cent in quantity, and plates, sheets, bars, etc., 56 per cent, as compared with 1926 figures, whereas exports of tubes, moldings, castings, and other shapes decreased 28 per cent. Exports of table, kitchen, and hospital utensils increased 7 per cent in 1927 and exports of "other aluminum manufactures" increased 56 per cent as compared with 1926.

The principal aluminum producing plant in the United States was at Massena, N. Y., where approximately half of the metal made in the United States was recovered; there were also plants at Niagara Falls, N. Y., and at Alcoa, Tenn., and Badin (Whitney), N. C. The Aluminum Company of America completed their control dams on the Yadkin and Little Tennessee rivers in North Carolina during 1927, thus assuring continuous power for their Alcoa and Badin plants, which hitherto had suffered from shortage of power at times of drought. During the year aluminum was in large demand in the reduction of automobiles, especially for pis-

tons and reciprocating parts of automotive engines. Aluminum powder for paint pigment was more extensively used, as also was aluminum foil. Aluminum collapsible tubes for pastes, greases, etc., a new but growing utility, and aluminum shingles and corrugated sheet for roofing and siding, were more widely used during 1927 than previously, and the use of aluminum in the manufacture of motor busses, railroad and street cars, airplanes, and furniture was increased during the year.

See also under **CHEMISTRY, INDUSTRIAL.**

ALVORD, CLARENCE WALWORTH. American historian and educator, died at Diano Marina, Italy, January 27. He was born at Greenfield, Mass., May 21, 1868, and was educated at Williams College, the University of Berlin and the University of Illinois. His first teaching was done at the Milton, Mass., Academy, 1891-93, and from 1897 to 1901 he was an instructor at the preparatory school of the University of Illinois. In the latter year he became an instructor in history at the university, and he advanced in position until he became professor of history in 1913. From 1920 to 1923 he was professor of history at the University of Minnesota. He was a member of many historical societies, and wrote extensively on the history of the Mississippi Valley and the Middle West. Among his books were: *Mississippi Valley in British Politics* (2 vols., 1917), to which was awarded the Loubat prize; *The Illinois Country* (1919).

AMERICA. See **ANTHROPOLOGY.**

AMERICAN ASSOCIATIONS AND SOCIETIES. For various scientific and other organizations whose official titles begin with the word American, see under the important descriptive word of the title.

AMERICAN LEGION. An organization of World War veterans chartered by Congress "to uphold and defend the Constitution of the United States; to maintain law and order; to foster and perpetuate a 100 per cent Americanism; to preserve the memories and incidents of association in the Great War; to inculcate a sense of individual obligation to the community, state, and nation; to combat the autocracy of both the classes and the masses; to make right the master of might; to promote peace and good will on earth; to safeguard and transmit to posterity the principles of justice, freedom, and democracy; to consecrate and sanctify the comradeship of the members by devotion to mutual helpfulness."

The tenth annual convention of the Legion was held in San Antonio, Texas, Oct. 8 to 12, 1928, with a delegate attendance of 1116, representing every State, the District of Columbia, five territorial and five foreign Legion departments. The retiring national commander, Edward E. Spafford, in his annual report to the convention, cited the carrying out of the Legion objectives for the year as fixed by the preceding national convention: The recovery of monetary rewards for the disabled totaling \$2,788,301.15, in twelve months up to June 30; the care of dependent children by advancing improved child welfare legislation; the participation of more than 122,000 boys under 17 years of age in the Junior Baseball programme sponsored to the extent of \$50,000 by the two major baseball leagues; the enactment of national legislation providing \$15,000,000 for new hospital construction, the passage of the bill for the retirement

of disabled emergency army officers and the liberalizing of the Veterans Bureau act; the nation-wide educational campaign in favor of the Universal Draft bill not yet enacted; the marking of towns to guide air pilots; and community service. The national convention reaffirmed the Legion's stand on promoting national defense and world peace; the passage of the Universal Draft act; the promotion of junior baseball and the advancement of child welfare legislation in various states.

Distinguished guests of the convention included Field Marshal Lord Allenby of Great Britain; Gen. John J. Pershing, U. S. A.; William Green, president of the American Federation of Labor; Major Georges Scapini, blind war hero of France and a member of the French Chamber of Deputies; and Dwight F. Davis, Secretary of War. The convention chose Louisville, Ky., as the place for the eleventh convention, to meet in 1929. Following the close of the convention, the retiring national commander, Edward E. Spafford, and the national adjutant, James F. Barton, headed a group of Legionnaires on a tour of Mexico, visiting Mexico City where they were welcomed by President Calles. Many side trips were made to border cities in Mexico by the Legionnaires who carried with them the spirit of good will and the promotion of friendly relations, as was done on the post-convention tour of European countries following the ninth annual convention held in Paris, Sept. 19 to 24, 1927.

The official publication of the national organization is *The American Legion Monthly*, published at 2457 East Washington Street, Indianapolis, Ind., in addition to which there are official publications of departments and posts totaling 215. The membership of the Legion on Sept. 9, 1928 was 751,721. The American Legion Auxiliary, composed of mothers, wives, sisters, and daughters of veterans, had a membership, as of Aug. 31, 1928, of 297,957. The Auxiliary, La Société des 40 Hommes and 8 Chevaux, and La Boutique des Huit Chapeaux et Quarante Femmes, the fun-making and honor organizations of the Legion and Auxiliary respectively, aided the Legion in all its endeavors.

The officers of the Legion elected for the year 1928-29 follow: Paul V. McNutt, Bloomington, Ind., national commander; E. L. White, of Connecticut, Lawrence E. McGann, of Illinois, George Malone, of Nevada, Millard C. Foster, of South Carolina, and Walton D. Hood, of Texas, national vice commanders; Rabbi Herman J. Beck, of Pennsylvania, national chaplain. The following national officers continued in office: James F. Barton, of Iowa, national adjutant; Scott W. Lucas, of Illinois, national judge advocate; Bowman Elder, of Indiana, national treasurer; and Eben Putnam, of Massachusetts, national historian. The permanent headquarters of the Legion are in the War Memorial Building of the \$10,000,000 War Memorial Plaza of Indianapolis, Ind.

AMERICAN REVOLUTION CELEBRATIONS. See CELEBRATIONS.

AMHERST COLLEGE. An institution for the higher education of men, at Amherst, Mass.; founded in 1821. For the 1928 autumn term 739 students were enrolled, including: Fellows, 7; graduate students, 7; seniors, 159; juniors, 167; sophomores, 200; freshmen, 197; and specials, 4. The active faculty, exclusive of emeritus and

administrative officers and those on leave, numbered 65. The productive funds of the College amounted to \$7,250,000, and the income for the year was \$712,000. The library contained 151,000 volumes. During the year the Anson D. Morse Professorship of History was established by a gift of \$160,000 from a donor whose name was not made public; the Charles Morton Merrill Fund (scholarship) was established through a gift of securities, valued at about \$100,000, by Charles E. Merrill, class of 1908; and the Moore Chemistry Laboratory, the gift of Mrs. William Henry Moore, Edward Small Moore, and Paul Moore, was under construction. President, Arthur Stanley Pease, Ph.D.

AMMONIUM SULPHATE. See FERTILIZERS.

AMUNDSEN, ă'mŭn'sen, ROALD. Norwegian explorer who discovered the South Pole, was last heard from June 18, a few hours after he and five others left Trömsö, Norway, in the French Latham seaplane, to search for Umberto Nobile and his *Italia* crew, who were lost in the Arctic. (See POLAR RESEARCH.) The governments of Norway, France, and Italy abandoned hope of recovering either party of explorers soon after a float, found drifting near the Fugloe Islands off the coast of Trömsö on August 31, was identified as that of the Latham plane. Amundsen was born at Borge, Norway, July 16, 1872, and after being two years at a medical college in Christiania (now Oslo), he gave up that profession, and in 1893 tried unsuccessfully to join the crew of the *Fram* on Fridtjof Nansen's arctic expedition. He spent the next few years on whaling and fishing boats, and, having also attended the Christiania public sailors' school, he joined the *Belgica* in 1897 as first mate, and accompanied Captain Adrien de Gerlache on the first expedition to remain throughout the winter in the Antarctic region. Two years after his return to Norway, in 1899, Amundsen raised enough money to buy a small whaling boat, the *Gjøa*, and sailing north, he hunted, and made important observations concerning the East Greenland currents. On June 16, 1903, he was able to start in the *Gjøa* with six men to accomplish what no other ship had ever achieved, the passage from the Atlantic to the Pacific Ocean north of America. This expedition took three years, and making his base at King William Land, Amundsen recorded scientific measurements and observations, many of which had not been computed at the time of his death by the authorities in Norway. He proved that the north magnetic pole is near Boothia Felix, the northernmost point of the American continent, but that it has no immovable position such as Sir John Ross assigned to it in 1831.

Returning to Norway, Amundsen bought Nansen's ship, the *Fram*, and hoping to be the first to reach the North Pole, he commenced the long preparation necessary for such an expedition. When Robert E. Peary, U.S.N., discovered the pole Apr. 7, 1909, Amundsen gave no sign of altering his plans for an arctic trip, but started from Norway August 9, of the following year. When he reached the Madeira Islands he informed his crew that he intended to reverse his course and be the first to reach the South Pole. Capt. Robert Falcon Scott of the British Navy had already started from England with the same purpose, and the rivalry in England and Norway grew tense. Amundsen and his companions were expert on skis, and having made their winter

base at the Bay of Whales, they started on foot with a pack of perfectly trained sledge dogs. Skillful management and clear weather brought them to the South Pole, Dec. 14, 1911, several weeks ahead of Scott. They planted the Norwegian flag on the plateau at the pole, and left messages for the English expedition. After his return from the discovery of the South Pole, Amundsen lectured in Europe, Australia, and North America. During the World War he served as commander in the Norwegian Naval Air Service. At the end of the War, in 1928, he bought the *Maud*, and started from Oslo intending to travel as far as possible by water, and then to drift over the North Pole on the ice current. Completing the northeast passage he landed at Nome, Alaska, with engine trouble, in July, 1920, and after another attempt to reach the pole on the *Maud*, with an airplane on board, in 1922, Amundsen became bankrupt in 1924, and postponing his efforts to reach the Arctic he came to the United States. When he arrived, Lincoln Ellsworth, an American explorer, offered to finance him, and on May 21, 1925, they headed for the North Pole in two seaplanes from Spitsbergen, but were forced to turn back when only six hundred miles out. Amundsen, determining that airplanes were better for the flight, made arrangements to fly with Nobile in the dirigible *Norge*, which the Italian had designed and built. The two explorers started, with Ellsworth and Lieutenant Riiser-Larsen, from Spitsbergen May 11, 1926, backed by the Italian Government, and after a flight of seventy-two hours they landed at Teller, on the northern coast of Alaska, having been the first to cross the polar sea. The impulsiveness of Amundsen's adventurous nature led him to trouble as well as to achievement. He and Nobile parted, disputing whether Norway or Italy deserved the credit for the flight. When it became known that Nobile was lost on his second flight to the Arctic, Amundsen, who had retired to Oslo, volunteered to join one of the relief planes sent in search of him. Amundsen wrote: *The North-West Passage* (1907); *The South Pole* (1910-12); *The North-East Passage* (1918-20); *The Flight Across the Polar Sea* (1926); and *My Life as an Explorer* (1927).

ANÆMIA. The treatment of pernicious or incurable anæmia by liver feeding had been known to the world for about two years only, yet few innovations had been accepted so early and so whole-heartedly. It was estimated in 1928 that more than 2000 patients had thus been treated throughout the world, and in not more than 1 per cent was total failure recorded. The price of liver had increased to such a degree that it was one of the most expensive instead of cheapest meats; and the poor who once found beef liver within their means are said to have suffered dietetically, other cheap meats having increased in price. In looking for a discordant or hostile note, Hayem of Paris, now 90 years old and the dean of blood students, was the only reactionary; for while he could not dispute the good results in the treatment of severe anæmias he insisted that technically the numerous cured cases were not examples of the true pernicious form. If he is right, the inference is near that the original pernicious anemia no longer exists, for the percentage of failures is negligible; unless he implies that the true disease will have only a short-lived respite. Naturally some time must still lapse before we can speak of good end results

and radical cures. See also under **FOOD AND NUTRITION. Nutritional Anæmias.**

ANALYTICAL CHEMISTRY. See **CHEMISTRY.**

ANAPLASMOSIS. See **VETERINARY MEDICINE.**

ANDORRA, ăn-dôr'ra. One of the smallest republics in the world, under the joint suzerainty of the French President and the Spanish Bishop of Urgel; situated in a valley of the Pyrenees. Area, 191 square miles; population, 5231, scattered in six villages. The inhabitants speak Catalan and are Roman Catholics. The government is under a council of 24 members which nominates a First Syndic in whom is vested the executive power.

ANDREWS, ăn'drôoz, GEORGE. American soldier, died at Washington, D. C., September 10. Born at Providence R. I., Aug. 26, 1850, he was graduated from the United States Military Academy in 1876, and was commissioned second lieutenant in the Twenty-fifth Infantry. He rose through the successive grades until Feb. 26, 1898, when he became assistant adjutant general with the rank of major. He served in Cuba and in the Philippines as well as in the United States. His service in the Adjutant-General Department culminated Aug. 5, 1912, with his appointment as the Adjutant General of the Army, a position which he held until his retirement in 1914.

ANEMIA. See **ANÆMIA.**

ANGOLA, an-go'la, or **PORTUGUESE WEST AFRICA.** A colony on the west coast of Africa belonging to Portugal since 1575, with the exception of the years 1641 to 1648 when it was held by the Dutch. Its present boundaries were assigned by conventions of May 12, 1886, Dec. 30, 1886, May 25, 1891, and June 11, 1891, separating it from the French Congo, Southwest Africa (afterward united with the Union of South Africa), Belgian Congo, and British South Africa (now Union of South Africa), respectively. Area, 484,800 square miles; population, according to Portuguese estimates in 1920, 5,000,000, but the native population had been estimated as low as 2,124,361 in 1914. Capital, São Paulo de Loanda; other important towns, Kabinda, Ambriz, Novo Redondo, Benguella, Mossamedes, and Port Alexander.

According to the latest available educational statistics there are 52 government schools, seven municipal schools, and two private schools, with about 2410 pupils altogether. The principal products are coffee, rubber, wax, sugar, vegetable oils, coconuts, ivory, oxen, and fish. Mineral products include malachite, copper, iron, petroleum, and salt, and gold has also been found. In 1926 the imports were valued at 225,569,000 escudos and the exports at 188,459,000 escudos. The chief imports of the province are textiles and the chief exports are coffee, maize, diamonds, and oil-seeds. The bulk of both the export and import trade is with the mother country. Angola has its own budget, the revenues for which are largely derived from taxation and customs duties, although from time to time the home government grants a subsidy. In 1926-27 the estimated revenue and expenditure was 135,218,863 escudos and 193,187,692 escudos, respectively. In 1920, 818 miles of railway were open to traffic. There were also 2420 miles of roads and 7452 miles of telegraph lines. The government is in the hands of a high commissioner vested with large powers, whose seat of government is at

Loanda. The colony, according to the charter of Oct. 15, 1926, is divided into 12 administrative districts, each under a governor.

ANHALT, än'hält. A German free state, formerly a duchy of the German Empire, bounded by the Prussian provinces of Brandenburg and Saxony. Area, 888 square miles; population, according to the census of 1925, 351,045. Capital, Dessau, 71,272 inhabitants in 1925. Other cities with their populations in 1925 are: Bernburg, 34,305; Cöthen, 26,595; Zerbst, 19,470; Rossau, 12,520; and Coswig, 10,103. The majority of the population adheres to the Protestant religion. The estimated revenue and expenditure for the fiscal year 1927-28 balanced at 24,472,000 marks. The public debt on Mar. 31, 1927, was 18,000,000 marks and the value of state property on Mar. 31, 1927, was 350,000,000. The government under the constitution of the free state of Anhalt dates from July 18, 1919, and by the law of Nov. 6, 1922, the administration is carried on by a ministry of state consisting of the prime minister or minister president and either one or two other ministers. As a result of the election held in November, 1924, the following parties were returned to the legislature: Socialists, 15; Middle Class party, 14; Democrats, 4; Communists, 4; and National Socialist, 1.

ANIMAL DISEASES. See VETERINARY MEDICINE.

ANNAM, än-näm'. A protectorate belonging to France, forming a part of French Indo-China (see FRENCH INDO-CHINA) whose present status was established by the treaty of Feb. 23, 1886. Area, about 39,758 square miles; population in 1926, 5,580,794, including 2584 Europeans, exclusive of the military forces. Capital Hué, with a population of 60,611; largest town, Binh-Dinh, with a population of 147,199. The population is Annamite in the towns and along the coast, while Moi tribes inhabit the highlands. The products include rice, cotton, corn, and other cereals, mulberry, the arica nut, cinnamon, tobacco, sugar, betel, manioc, and bamboo. The forest products include coffee, dye, medicinal plants, caoutchou, and cardamoms. Raw silk is also produced. Probably the most important product is rice. Of the minerals, copper, zinc, coal, hematite, iron, and salt are worked to some extent. Exports in 1926 totaled 96,775,317 francs; imports, 67,468,123 francs. The nominal head of the government is the king, but actual power is vested in the French Resident Superior. French troops are in occupation of a part of the citadel in the capital. King in 1928 Bao-Dai, who succeeded to the throne Nov. 6, 1925. During his minority the government is in the hands of a Regency Council. A chamber of representatives of the people was established in 1926.

ANNIVERSARIES. See CELEBRATIONS.

ANTARCTIC EXPLORATIONS. See POLAR RESEARCH.

ANTHRAX. The sensational cases of shaving brush infection from the anthrax bacillus seem to have been prevented by better supervision of manufactures, but anthrax as an occupational disease is still with us as shown by a paper published in *The Lancet* for Sept. 22, 1928, by Dr. A. E. Hodgson of the City Hospital at Liverpool. This author first reminds us that the city and port of Liverpool has the largest trade in wool, hair, and hides in the world and that many tanneries are present in the vicinity. In four and a half years he had had 31 patients

with the so-called cutaneous anthrax, otherwise malignant pustule or malignant carbuncle. Of this number but two patients died. This superior result he obtained entirely through treatment with anthrax serum, for nothing was done locally save apply antiseptic dressings. It is unfortunate that he did not mention blood tests, for the general belief has been that after the bacillus has gained access to the patient's blood the outlook for recovery is bad. He merely stated that the two fatalities were in an advanced stage of the disease on admission. The serum is injected into the veins while those men who have been exposed to infection have received preventive subcutaneous injections, and thus far no workman treated in this manner has contracted the disease.

ANTHROPOLOGY. The year was rather infertile, if measured in terms of publications, expeditions, discoveries, or novel views. Its most significant feature perhaps was the appearance of several synthetic studies in the American field. This would indicate that anthropologists in 1928 were in a position to summarize and compare the cultures of broad areas without glossing a multitude of lacunae. Several of these studies bear on southwestern United States, others on the Southern States and Middle America, while for the first time the cultural antecedents of the Eskimo had been established by broad scale archaeological investigations.

The primary concern of anthropologists appeared to be the unravelling of culture history. More theoretical problems still lie fallow, although on this side F. Boas' *Primitive Art* is a noteworthy contribution. The second volume of W. Schmidt's monumental *Ursprung der Gottesidee* deals with religious beliefs which this author holds archaic, such as those of the Bushmen and Algonkians.

Popular interest had not slackened. Numerous magazine articles appeared on race problems, primitive mores, and the like. One general work has been provided the English reading public, F. Boas' *Anthropology and Modern Life* (New York).

Theoretical Ethnology. The spread of mankind over the world in ancient times carried everywhere the basic arts on which all civilizations rest. But as they shifted from one geographic environment to another, adaptations of the archaic culture were necessary and new forms made their appearance. Dissemination of these new arts by contact as well as migration is known from the earliest times. The course of culture history, in short, has been the repeated development of local specializations, followed by their diffusion which led to a releveling of cultures, on which basis new specializations in turn appeared, and so endlessly. Such is the essential process of *The Building of Cultures* (New York) as outlined by R. B. Dixon, and in which he is at one with the majority of American scholars. In such a view a predominant rôle is given neither to environment nor diffusion. Not content with the task of delineating the world development of cultures, Dixon took on himself the task of demolishing the position of the extreme environmentalists and the arch diffusionists (Wissler, Elliot Smith, Perry, Graebner, and Schmidt).

Inferences of this sort rest on the interpretation of cultural resemblances over the world. Some attention has been given in recent years to refining the technique for handling these data in more objective fashion. A discussion of "Probability and the Diffusion of Culture Traits"

(*Amer. Anth.*, 30, 94), by W. D. Wallis, involves a criticism of the statistical method propounded by Clements, Schenck, and Brown (see *YEAR BOOK* for 1926, p. 41). All similar traits found in two groups cannot be given the same weight in determining relationships, according to Wallis. Clements has successfully met the criticism (*ibid.* 295).

The classic definition of culture propounded by Tylor, the founder of modern anthropology, as "those capabilities and habits acquired by man as a member of society," has been tacitly accepted by all his followers. If it means anything, it means that culture is a set of behavior patterns, and that the anthropologist's chief concern should be with determining how the original nature of man becomes fixed in these forms. Even such an approach as M. Mead's *Coming of Age in Samoa* (New York) is quite oblique. This author set herself the task of determining how far acts of an adolescent girl are determined by her physiological status and how far by the conventions of her society, and to this end contrasts Samoan experiences with modern America. Since Samoan households are fluid in the extreme and expanded, as it were, by all the blood bonds that thread through the village, personality differences can be easily adjusted by a change of residence. "Within the household, age rather than relationship gives disciplinary authority." The child's knowledge of sex is unsophisticated and sex relations are entered upon naturally and casually. Adolescence is for the Samoan girls not a period of stress but "instead an orderly development of a set of slowly maturing interests and activities."

For many years F. Boas has contributed to the subject of *Primitive Art* (Oslo); these observations have now been coordinated and expanded in a general discussion. The whole field of primitive artistic expression is explored, graphic and plastic art, music, literature, and the dance, but the former come in for the major share of analysis. There are certain principles, however, that hold for all forms. "Art arises from two sources, from technical pursuits and from the expression of emotions and thought, as soon as these take fixed form. . . . Artistic enjoyment is, therefore, based essentially upon the reaction of our minds to form." So far as technical control enters, the aesthetic response is not alone to the form achieved but lies as well in the sense of complete control or virtuosity. Play with technical processes has often resulted in forms, which in turn have become the fundamental styles of a people's art. Some of these formal elements are due to symmetry, rhythm, and emphasis of form. But equally important in characterizing a style is the conceptual content or symbolism, i.e., what the form represents to the observer.

The same meaning can be expressed by geometric forms or realistic, depending on how great the symbolic content, or how fixed the association between form and meaning. An art may then develop along either of these lines, geometric-symbolic or realistic-representative. From this point of view, the question as to whether geometric or realistic art was developed earlier, as maintained by some writers, becomes meaningless. Both forms may occur together among a single people, where caste or sex division of industries permits different lines of development; as indeed they do. On the whole, however, in primitive art, it is the stylistic form which contains

geometrical elements that influences most markedly the other forms of graphic art. When we compare the arts of space (graphic and plastic arts) with the arts of time (poetry, music) we find rhythm to be common, "and it seems likely that the rhythm of technique is merely a special expression of the rhythm of time, in so far as the rhythmic movements result in rhythmic forms when applied to technical pursuits." Symmetry is, however, lacking in the arts of time, because an inverted order does not convey the same sense of order, but it does occur in the dance, which combines both space and time. The time arts also rest on symbolic meaning for their ulterior significance.

PREHISTORY. An excellent survey of the prehistory of Siberia and Mongolia has been provided by W. Jochelson incidental to his "Archæological Investigations in Kamchatka" (*Carnegie Inst. Wash.*, No. 388). Palæolithic remains are concentrated in southwestern Siberia and occur in Mongolia. Their geological and cultural position is somewhat uncertain, but the earliest are generally comparable to the European Mousterian. Neolithic sites, derived from these, are scattered throughout Siberia, Mongolia, and Manchuria. The Siberian neolithic may have existed under a more genial climate than the present. Bronze-age culture, with possible Scythian and Assyrian affiliations, is known from the upper Yenisei and Lake Baikal. The iron industry seems to have outstripped it, following directly on the neolithic in further Siberia. Kamchatkan remains are of neolithic type only, attributable to the historic Kamchadal. One type of pottery which was found affiliates with Aino remains as far south as Japan.

A first modern survey of "*Le paléolithique italien*," by R. Vaufrey, has appeared (*Archives de l'Institut de Paléontologie humaine*, mem. 3).

Several hundred prehistoric sites were discovered in the North Arabian Desert by H. Field. P. Van Stein Callenfels investigated neolithic and palæolithic remains in Sumatra.

Progress was made in unraveling the unfortunately scanty neolithic remains in Egypt. G. Caton-Thompson now recognizes two neolithic horizons in the Fayum Desert; the earlier agricultural, the later a poor fishing culture, degenerated because of the shrinkage of the neolithic lake in this area. This culture may have extended into early pre-Dynastic times (*Man*, July, No. 80). The geological conditions of Pleistocene and later times in this area was in process of being worked out (see *Nature*, Apr. 28, 670). It has been suggested that these neolithic cultures are Mauretanian in origin. V. G. Childe upholds their primary local origin. The local forms at first spread westward, to be succeeded by a counter cultural influence (*Ancient Egypt*, 1928, pt. 1).

Several years ago cultures were discovered in the Indus Valley which linked with that of Susa in Mesopotamia. This led to the suggestion of a basic Indo-Sumerian culture. J. Marshall believes, however, that the "Indus" culture is distinctive, although showing intercourse with Susa (*Nature*, Jan. 14, 68). Cross-dating of Indian seals found at Susa fixes the later cities in the Indus at about 3300 B.C. A copper model of a two-wheeled cart found there is thus a thousand years earlier than one figured at Ur, which in turn antedates the use of the wheel in Egypt by another millennium. The drainage system and

other features exhibit a higher degree of development than at Ur.

A rich bronze culture has been discovered by the Oxford-Field Museum expedition at Kish, which S. Langdon dates at a thousand years earlier than the superposed deposit of Sargonic times. The latter rests on an intervening layer which dates before 2900 B.C. (*Nature*, May 26, 1939).

An English expedition left in September for a prehistoric survey of South Kurdistan.

STUDIES ON THE ORIGIN OF CULTIVATED PLANTS (*Bull. Applied Botany and Plant-Breeding*, 26, Leningrad) have an important bearing on the first centres of civilization in neolithic times. N. Vavilov argues for a polyphyletic origin of the principal grain crops in the Old World, although this may not mean an equal number of independent origins of cultivation. Since the wild varieties are almost wholly mountainous, Vavilov argues against their first cultivation in the great river valleys, favoring rather such areas as the Caucasus, Bokhara, Afghanistan, Asia Minor, and Abyssinia.

PHYSICAL ANTHROPOLOGY. The abundance of fossil remains in the Old World linking man to an anthropoid ape ancestry has been accepted as indicating his origin in that quarter. The single find suggesting an early New World existence is a molar tooth from the Tertiary of Western Nebraska which Osborn in 1922 declared a new species, *Hesperopithecus*. New finds led W. K. Gregory to declare "*Hesperopithecus* Apparently Not an Ape nor a Man" (*Science*, 66, 579), the teeth pertaining to an extinct peccary. This negates the best palaeontological evidence for an American origin. Since Osborn rested his case for "Dawn Man" (*Science*, May 20, 1927) on supposed artifacts from the same beds as *Hesperopithecus*, it is important to observe that N. C. Nelson concludes (*Science*, March 23, 1916) that these are pseudo-artifacts, a series selected from innumerable bone fragments because of a fancied or supposed resemblance to human artifacts.

The discovery was announced of a second hominoid tooth in a cave deposit at Chou Kou Tien near Peking, possibly of very early Pleistocene age, and possibly a new genus *Sinanthropus* (*Science*, February 3, 1935).

The publication of A. Hrdlička's "The Neanderthal Phase of Man" (*Jour. Royal Anth. Inst.*, 57, 249) may effect a revolution in our views of the derivation of modern man and of the character of Pleistocene times, should it prevail. In brief, Hrdlička holds that the Penck-Brückner conception of four Pleistocene glaciations is not in accord with the facts; that there were but two major ice movements, Neanderthal man making his appearance toward the close of the warm interval between them. Further, since ancestors of modern man (*Homo sapiens*) are unknown at that time and Neanderthal man appears suddenly to have become extinct, it is preferable to look for *Homo sapiens*' ancestry in the Neanderthal period. For support of this, Hrdlička looks to the wide variations in the Neanderthal race in the direction of modern man.

A new find of three skeletons of the Crô-Magnon race was reported from the Vallée du Roc, Charente, France.

An Expedition under L. S. B. Leakey left August 1 to continue investigations in Kenya, East Africa, where skulls of presumably Pleisto-

cene age and resembling those of European Combe Capelle were found in 1926-27.

A number of analyses of local populations have been made. Measurements of the little-known aborigines of Formosa were made by A. Matsu-mura and E. Miyauchi (*Proc. Imp. Acad. Tokyo*, 3). The central mountain tribes are, in general, shorter, more broad headed, and with wider noses from north to south. Hawaiian natives have been found more like those of Tonga and the Marquesas than Samoans, according to Sullivan and Wissler (*Mem. Bishop Mus.*, 9, No. 4). An Anthropometric Study of Hawaiians of Pure and of Mixed Blood was made by L. C. Dunn. Measurements of a small number of Onas (Tierra del Fuego) were published by R. Lehmann-Nitsche, which, however, doubles the number on record (*Anales del Museo de la Plata*, 2, 57). M. E. B. Renaud classifies *Les Plus Anciens Crânes Indiens du Sud-Ouest Américain*, the dolicocephalic Basket-Makers, with the somewhat hypothetical Lagoa Santa race of South America, and with Verneau inclines to a Papuan connection (*Revue anthropologique*, 38, 43).

A current explanation for racial differences in pigmentation of the skin rests on the assumption that this varies in its absorptive and reflective properties. It is important to observe that Shaxby and Bonnell found no differences between Caucasian and Negro skins (*Man*, April, No. 42). An important method for analyzing *Family Traits as Determined by Heredity and Environment* was demonstrated by F. Boas (*Proc. Nat. Acad. Sci.*, 14, 496).

OLD WORLD ETHNOGRAPHY. Madagascar, that Malay enclave of Africa, has remained ethnographically obscure despite Grandidier's classic account. As the result of his recent survey, R. Linton is now able to discriminate three Culture Areas in Madagascar (*Amer. Anthro.* 30, 363). The east coast area is characterized by local patrilineal units, each comprising a series of villages. Fishing is important and domestic animals are for sacrifice only. Each local group (gens) has a chief by primogeniture; that of the leading gens is tribal king, whose function is judicial. Marriage is exogamous. Each tribe has a sacred river. In the plateau area hilltop villages are fortified. Rice is cultivated in an elaborate terrace system; weaving is highly developed, pottery and metal working less so. The gentile organization of the east coast is here partly superseded by a feudal system in which the king allots estates to his retainers. He is an absolute monarch, controlling all life, owning all land, and taking a ground rent. Marriage is ordinarily endogamous to keep property in the family. The west coast and south is predominantly a cattle area, agriculture is little practiced, and milk the chief food. Metal work, carvings, and decorations are highly developed. Canoes have outriggers; fishing is important. Political groups were larger and more closely knit than in the other areas, although the gens is here also the social unit. The king is absolute and is treated with exaggerated respect. There is no noble class as in the other areas. The family is patrilineal and marriage usually endogamous. A supreme being is clearly personified and has his antithesis in a god of evil. Medicine-men have an important rôle. Common to all the areas are agriculture, ancestor worship, and sacrifice.

The success attending the now general use of distribution studies in unravelling culture history

is exemplified by K. G. Lindblom's "The Spiked Wheel-Trap" (*Riksmus. Ethnog. Avdeln.*, Stockholm, No. 5). The device is common to the Nile and Niger drainages, Central Europe and in central Asia among ruder peoples. This suggests an ancient origin; it was in fact known to the classical world, and may date from late Palæolithic times. Similarly Lindblom finds that "The Use of the Hammock in Africa" (same ser., No. 7) is derived from native America through European intermediacy.

An archaeological and anthropometric expedition to the Sudan by F. R. Wulsin, P. T. L. Putnam, and M. Katz was undertaken for Harvard University. Their survey is from Rejaf on the Nile by way of Lake Chad to Nigeria.

The first number of *Africa*, the journal of the new International Institute of African Languages and Cultures, appeared under the editorship of D. Westermann. It contains much ethnographic material, with some emphasis on its utilization for administration of the natives.

An analysis of *The Formation of the Chinese People* (Cambridge), by Chi Li, is based on local physical types, wall-building activities, and the distribution of family names between 722 B.C. and 1644 A.D. This author insists on the composite character of the Chinese population.

Among the simplest Malayan people, untouched by Hindu and Mohammedan influences, are the natives of Mentawai Island, west of Sumatra. E. M. Loeb sketches "Mentawai Social Organization" (*Amer. Anth.*, 30, 408) as centring in two groups; communities within the village, each with a ceremonial house, and the family group. The manifold rituals of the former are in charge of a priest, of the latter, the husband, who is in a sense a priest. Kinship is of the sib type, although sibs, present in Sumatra, are unknown here. Marriage is matrilineal and effected by purchase. In most instances the couple live together long before the formal marriage takes place; children born prior to this are adopted by the woman's family and readopted by the father after the ceremony.

The culture of barely known *Rossel Island* (Cambridge) is to some extent different from other southern Massim groups (Melanesia), according to W. E. Armstrong. Their language also has underlying non-Melanesian features.

The University of Leningrad reported current linguistic work among several Siberian groups: Ostyak-Samoyed, Koryak, Asiatic Eskimo, Chukchi, Gilyak, Turki, and Tungus.

The Arctic and Sub-Arctic natives of Siberia differ from the corresponding tribes of America in their dependence on reindeer breeding. Researches on this subject by W. Bogoras bring several new features to light. The Yenisei-Ostyak and the Ostyak-Samoyed must now be added to the list of reindeer breeders. Hitherto it had been supposed that the Yeniseians were fishers using only dogs for transportation. Their reindeer are left to roam in the forests during spring and summer, in the manner of the Lapps. Not only do their deer, the largest in Siberia, resemble those of the Karghas and Soyot of the Savan Mountains, but details of breeding are the same.

The Ostyak-Samoyed are culturally affiliated with the Yeniseians, according to I. N. Prokofyev. Both are forest border tribes with similar material culture. The Ostyak-Samoyed language more closely resembles that of the south-

ern Samoyed than the adjacent northern branch (Yurak). The Shortsi, a Turki tribe east of the Obi River, are described as hunters and root gatherers devoid of cattle breeding and agriculture, by N. P. Dyrenkova and L. N. Potapov. These authors hold that this was originally the condition of life among other Siberian Turki tribes.

Cultural resemblances between the natives of northeast Siberia and northern North America have long been recognized. Some Russian students, notably W. Jochelson, account for these so-called Pala-Asiatics by a counter migration from America. Recently Jochelson pointed out that the material culture, mythology, and language of the Kamchadal (Kamchatka) more nearly resemble that of the Indians of the northwest coast of America than any other Asiatic tribe or the intervening Eskimo.

NEW WORLD ETHNOGRAPHY. The period had arrived in North American ethnography when summary studies of the larger areas were beginning to appear. While the continent was far from thoroughly described, this was witness to a maturity unknown a decade previously. A. L. Kroeber's summary for California in 1925 marked the first of these extended surveys. To this he added a brief delineation of the southwestern area, which was scrutinized in more detail by L. Spier, while J. R. Swanton brought to a head his researches on the southeastern area.

The Native Culture of the Southwest (*Univ. Calif. Publ. Amer. Arch. Ethn.*, 23, No. 9) can no longer be conceived as having had only a single early focus in northern Pueblo culture, but the existence and importance of another early development in southern Arizona and Sonora must be recognized. A generic connection of southern Californian culture with Mexico, but not through the intermediacy of the Pueblos, would then be intelligible as derived from a Gila-Sonora source. Central California on the other hand may have been directly affected by Pueblo culture proper. It is doubtful that many Americanists will follow Kroeber in his further and tenuous view that Southwestern and Mexican cultures have affected a far wider span of North American tribes.

Ethnographic studies began in the Southwest in the 'eighties, but these have remained largely uncoordinated. There was, in fact, no well rounded sketch of a single tribe, nor any extended comparative work, prior to the appearance of L. Spier's "Havasupai Ethnography" (*Anth. Papers, Amer. Mus. Nat. Hist.*, 29, pt. 3). The Havasupai are a non-typical tribe, whose culture resembles more that of the lowly Great Basin peoples than the adjacent richly-endowed Hopi and Navajo. Investigation of cultural interrelations makes this study a profitable starting point for further researches.

Two brief contributions to the social and ceremonial structure of the Pueblos are (1) a summary of the hitherto unknown society of Acoma, by L. White, in which is revealed an organization surprisingly like Zuni to the West, and (2) the consequences of a Laguna migration to Isleta, in which E. C. Parsons points out the retention of the immigrant language and arts, but the integration of social and ceremonial organizations (*Amer. Anth.*, 30, 559, 602). The latter investigator is also convinced that there are many Spanish elements in the Kachina (god impersonation) cult of the Pueblos. Many masked

performances are thought to be taken over bodily from those used in folk-rituals of the early Spanish church. While this accounts for much of their recent development, the fundamentals of the cult are purely native.

An analysis of the "Social Life of the Navajo Indians," by G. E. Reichard (*Columbia Univ. Contr. Anthro.*, 7), reveals numerous localized and exogamous clans. Their localization appears due, in part, to matrilocal residence, coupled with the tendency of particular clans to link by intermarriage. Unlike Pueblo clans these are politically and ceremonially functionless. They are grouped in larger nameless sets, practically exogamous and not localized. Each set comprises clans bearing local names together with others named for Pueblos, etc. Polygyny takes several forms: sororate, or with mother and daughter, and with a woman and her sister's daughter. Marriage is preferably with a member of one's father's clan. Personal property, both tangible and incorporeal, is individually owned regardless of sex or age, and is matrilineally inherited: grazing land is communal. The last tribal assembly was held a century ago. So far as known, it followed the lead of a council of twelve war, and twelve peace, chiefs, any of whom might have been women.

Little has appeared on Southwestern archaeology, although a number of expeditions were in the field. The limits of early Pueblo culture were pushed westward to central Nevada by M. R. Harrington (*Indian Notes*, 234). A. B. Reagan reported on the little-known western Navajo country (Arizona), which contains remains from the early slabhouse period to the glazed ware era. N. Judd suggests that Pueblo Bonito (N. M.) held peoples of two distinct cultures. "Pottery Making in the Southwest" (*Univ. Calif. Publ. Amer. Arch. Ethn.*, 23, No. 8) involves two different techniques, which E. W. Gifford finds have different distributions.

Owing to the disintegration of the aboriginal culture of the Southeast in the colonial period, our sole sources have been recondite historical accounts. Great credit is due J. R. Swanton for marshalling order in this chaotic assemblage of data (*42nd. Ann. Rep. Bureau Amer. Ethnol.*). True Southeastern culture flourished from the Potomac to the Gulf and westward to the lower Mississippi, but was by no means homogeneous. Swanton recognizes subsidiary areas of specialization, but without sharp cleavage. In fact, resemblances between three areas (the Virginian region, Florida, and the lower Mississippi) suggest that the tribes in the heart of the Southeast (the Creek) have disrupted an earlier, more homogeneous culture. This is consonant with Creek legends of migration into their historic habitat. Swanton has presented as prefatory to this discussion his final synthesis of the data on the social organization and religious practices of the Creeks. As our only lengthy description of a Southeastern group, this will take its deserved place among the classics of ethnographic literature.

The caste system of the Natchez of Mississippi is a unique social form unmatched in America save on the northwest coast. J. P. B. de Josselin de Jong, following Kriekeberg's suggestion, derives the castes from ancient exogamous phratries. "The subdivisions of the nobility must be genetically related to the ancient graded clans and the peculiar rules of descent with regard to

class membership may be explained as a compromise between the strict observance of class exogamy and the growing tendency to endogamy which characterizes the Natchez organization as a nascent caste system."

Ethnographic studies from various areas have appeared: further contributions to the ethnology of the Fox Indians (Illinois), by T. Michelson (*Bull. Bur. Amer. Ethnol.*, 87), and wholly new "Notes on the Akwa'ala Indian of Lower California," by E. W. Gifford (*Univ. Calif. Publ. Amer. Arch. Ethn.*, 23, No. 7). Gifford also observes that the cultural position of the coast Yuki is that of a simple, ancient form of California culture, overlaid by traits from the southern outpost of the Northwest culture area in northwestern California (*Amer. Anth.* 30, 112). A southward drift of Northwest coast tribes is indicated by legends according to C. M. Barbeau. He also believes that the great development of the art of the totem poles is post-Russian, i.e. since 1850, although the basic art is prehistoric. F. Boas also holds the exuberant development to be recent, but allots some centuries to it (*Primitive Art*, Oslo). Geometric, non-realistic forms seem to have been the earlier and still persist in the South, which suggests that realism has spread from the North.

Progress was made toward establishing the origin of Eskimo culture. Boas and Steensby long ago inferred an inland origin in Sub-Arctic America, which Rasmussen's discovery of caribou-hunting Eskimo west of Hudson's Bay several years ago did much to reinforce. Now K. Birket-Smith has established the existence of elements of this culture throughout Eskimo territory and even beyond in North America and northern Eurasia. He concludes that "the oldest form of Eskimo culture seems to be closely related to a very old, circumpolar culture originally spread over vast regions in Arctic North America and Eurasia. The snowshoe-hunting culture of sub-Arctic America and the reindeer nomadism of Eurasia also spring from the same source, and it does not seem unlikely that it is related to palaeolithic culture." Archaeological evidence has now been found proving the existence of this early (Thule) culture from Alaska to Baffinland. T. Mathiassen, e.g., finds it in K. Rasmussen's collection from Point Barrow and Point Hope, Alaska; J. A. Mason also reports it from Point Barrow. According to A. Hrdlička, the skeletons found by Mason are identical with the present Eskimo of Greenland and Labrador, and differ from the present Alaskan Eskimo. H. B. Collins made an unusual find of bodies preserved by freezing on St. Lawrence Island.

The tendency toward a reduction of the number of linguistic stocks in North America continued. Powell fixed the number north of Mexico at 57. E. Sapir suggests provisionally six fundamental groups: Eskimo-Aleut, Algonquin-Wakashan, Nadene, Penutian, Hokan-Siouan, Aztec-Tanoan. F. Boas objects to such drastic reduction on the ground that the resemblances of these languages may have been due to diffusion rather than genetic connection. At least at one point Sapir seems mistaken. In 1913 he suggested that Wiyot of California was Algonquian. On the basis of G. Reichard's Wiyot grammar, C. C. Uhlenbeck shows that Wiyot is not clearly Algonquian, although there are suggestions of remote genetic connection and more recent lexical influence (*Med. Konink. Akad. Wetenschappen*,

Afdel. Letterk. 63, A, 9, 233; *Int. Archiv. f. Ethnol.*, 28, 153).

An estimate of "The Aboriginal Population of America North of Mexico" (*Smithson. Misc. Coll.* 80, No. 7), by the late J. Mooney, fixes their total at 1,153,000 prior to the period of decimation, their number of recent years being 406,000. Concentration was greatest in California and the plains. (Compare Sapper's estimate, *YEAR BOOK* for 1926, p. 46).

A brief description of the "Ruinas de Tizatlan, Tlaxcala," central Mexico, was issued by A. García Vega and E. Noguera (*Publ. Sect. Educación Pública*, Mexico City, 15, 11).

The relation of the several centres of higher civilization in middle America is conceived by A. L. Kroeber as that of specialized developments from a common cultural basis. These centres reduce on analysis to two, Peru and Mexico-Guatemala. The earliest Peruvian cultures (Nazca and Chimu) bear resemblances to Maya (Yucatan), to be sure, but the subsequent history of the two areas shows little interconnection. M. H. Saville sees Mayan and Chorotegan influences extending down the Pacific coast of Colombia and Ecuador, in fact northwestern South America bears closer resemblance to Central America than to the Peruvian complex to the south.

All of the early or at least simple cultures of Mexico and Central America cannot be grouped in Spinden's "Archaic" culture according to G. C. Vaillant. This investigator distinguishes a number of such lying between Vera Cruz and Costa Rica, representing various phases of development prior to the rise of the higher civilizations.

The most ancient centre of Mayan civilization on the basis of dated monuments is Uaxactun, northeast Peten, Guatemala. S. G. Morley believes that a newly discovered pyramid of "early, almost pre-Mayan style" may be the prototype from which Mayan architecture developed. O. Ricketson points out that the site was occupied long before even this early pyramid was built and that the pottery from this early level is not in the Mayan tradition. J. E. Thompson discovered three hitherto unrecorded Mayan cities in the Cayo district, British Honduras, which were at their height about the ninth century A.D. A surprising find of ancient Mayan textiles in this humid region was reported by F. Blom. Survival of the ancient ceremonial year of 260 days was found among the Quiché by S. K. Lothrop, and of Mayan rituals among the Jacaltenango (Guatemala) by O. La Farge. Even the writing system has been preserved among the Cuna of Panama (F. Nordenskiöld, *Comp. Ethn. Studies*, Göteborg, 7, 1).

An ingenious geological explanation for the gradual northward movement of the Maya during the height of their civilization is offered by L. G. Huntley (*Science*, September 21, 264). Yucatan and Guatemala form a porous limestone region, without surface drainage, but containing water in lakes and pools. Progressive tilting of the land from the south drained the more southerly pools, hence forcing a northward movement of the population.

A new classification of South American culture areas is offered by W. M. McGovern. In place of the historically conceptualized culture strata of Graebner and Schmidt, and the empirically derived areas of Wissler and Kroeber, McGovern's scheme implies a combination of both. He recognizes five major types distributed in

nineteen areas: 1. Areas of Primitive Culture (Fuegian, Patagonian, Pampa, Chaco, Uruguay). 2. Transitional Area (Brazilian Highlands, isolated Forest tribes). 3. Areas of Intermediate Culture (southwest and northwest Amazon, Sub-Andean, East Brazilian, Orinoco-Guiana). 4. Transitional Areas (Antillean, Colombian). 5. Areas of high culture (west coastal, Ecuadorian, Peruvian, Calchaquian, Araukanian).

The rude culture and great isolation of The Indians of Tierra del Fuego (*Contr. Mus. Amer. Ind.*, 10) have long stimulated curiosity. Detailed accounts are, however, of recent date. Kopper's and Gusinde's descriptions of their society and religion are now supplemented on the material side by S. K. Lothrop. This author, in line with prevailing ethnological thought, looks on Fuegian culture as representative of that of the earliest Indians of both Americas. A study of the material culture of the Tupi-Guarani of Brazil has been published by A. Métraux (Göteborg): others on Brazilian linguistics and osteology appeared in the *Revista do Museu Paulista* (Brazil), vol. 16, and R. Lehmann-Nitsche's study of the Temple of the Sun in Cuzco (Peru) in *Revista del Museo de La Plata* (Argentina), vol. 31.

Stratification of cultures was reported from Samaná, northeast Santo Domingo, by H. W. Krieger. A later culture is like that of the Ciguayan seen by Columbus; an earlier people possessed a more meager culture.

The antiquity of man in America is of perennial interest. There is inferential evidence that the ancestral Indians migrated across Behring Strait from Asia, possibly in late Pleistocene or early post-Pleistocene times, and probably with a simple culture corresponding to late paleolithic or early neolithic cultures of Europe and Asia. Heretofore no indubitable case of man's presence on this continent in early times has come to light. Finds of stone blades, associated with fossil types of bison, at Folsom, New Mexico, go far to meet the demands of skeptics. A dozen blades preclude the possibility of accident and their distinctness from historic Indian artifacts adds warrant to their antiquity. B. Brown described the site as a loess deposit of late Pleistocene date, but A. Penck thinks it post-Pleistocene, although ancient. One of the several recently posited cases, that of Frederick, Okla., was discussed by Hay, Cook, and Spier (*Science*, Feb. 10, 160; Apr. 6, 371; Apr. 27, 442; Aug. 24, 184). Hey holds that the artifacts are as old as the associated fossil animals, i.e. early Pleistocene (First Interglacial). Spier expresses doubt, since the artifacts may be of recent inclusion in the gravels, and their reputed antiquity over any known homoid remains in the world stands in contrast to their refined character.

Active search for traces of the original migrant groups across Behring Straits have been made by W. Jochelson in the Aleutian Islands, H. B. Collins on St. Lawrence and Nunivak islands, and A. Hrdlička on the Alaskan coast: all with negative results. The last holds that movements have been continuous since early times; that they were extensions rather than migrations and wholly by water in fairly recent geological times.

A useful "Bibliography of American Folklore," 1915-28, was prepared by A. Lesser (*Jour. Amer. Folklore*, 41, 1).

NEWS, EXPEDITIONS, PERSONALIA. Activities were not so great as in former years. The Göteborg Museum (Sweden) acquired South Amer-

ican collections made by C. Nimuendajú on the Rio Negro and A. Posnansky in the Andes. The ethnographic department of the Naturhistoriska Riksmuseet (Stockholm) continued C. C. Luck's investigations at Lumbwa, Kenya (East Africa), and received collections from British New Guinea and the Chocó (Colombia). The Rijks Ethnographisch Museum (Leiden) secured Siberian and Philippine material by exchange. C. C. Krieger had taken charge of the Far Eastern collections. The Koninklijke Vereeniging Koloniaal Instituut (Amsterdam) reported principal activities in the preparation of earlier expeditions to the Netherlands-Indies: Le Roux on the Rouffaer River and Nassau range in New Guinea, A. Kruyt on the Toradja (Celebes), E. Rodenwaldt on the mestizos of Kisar, and P. von S. Callenfels on Sumatran archaeology. Mr. and Mrs. Ph. C. Vissar-Hoof have reported on the region of middle Asia between Karakorum and Hindu-Kush. Similarly A. Maass (Berlin) has prepared further data on central Sumatra. The Museum für Völkerkunde in Leipzig was still in process of installation in new quarters. Collections were added from China, India, the Amazon, East Africa, and from peasant groups of Europe. Jointly with the Völkermuseen in Hamburg and Dresden, C. Nimuendajú was sent to collect on the lower Tokantins River (South America).

The Forschungsinstitut für Völkerkunde in Leipzig maintained Dr. von Eickstedt in Further India, P. Germann among the interior peoples of Liberia, and J. H. Wilhelm in Angola, north Kalahari, and on the sources of the Zambesi. Seven halls were opened in the new Museum für Völkerkunde in Vienna, containing Far Eastern and Siberian material. The activities of the Anthropologisches Institut der Universität Wien in physical anthropology included J. Wastl's investigation of Tatars, and E. Bondi on skeletal material from New Guinea. V. Lebzelter (Vienna) returned from an expedition to the Bushmen (South Africa) undertaken under the patronage of the Pope through the intermediacy of W. Schmidt (Rome). Of the same *Anthropos* group in Vienna, P. Schumacher visited the Pygmies of Ruanda (East Africa) and P. M. Gusinde the Pueblos (southwest United States). *Anthropos* also published P. Leser's *Entstehung und Verbreitung des Pfuges*, P. Boesch's, *Les Banyamwezi*, and P. Royen's *Die Nominalklassifikation in den Sprachen der Erde*. For the Museo Nazionale di Antropologia e Etnologia (Florence), Prof. Puccioni was in Cirenaica (North Africa) and L. Cipriani in South Africa. Collections of ethnographic and skeletal material have been obtained in Somali (northeast Africa).

At the University of Cambridge (England) E. Minns succeeded the late Sir W. Ridgeway in the Disney Chair of Archaeology. R. U. Sayce, formerly of the University of Pietermaritzburg, was appointed to lecture on physical anthropology and material culture. Activity was curtailed for lack of funds, but coöperation was possible with L. S. B. Leaky in Kenya (East Africa) and W. E. Armstrong of Rossel Island (Melanesia). At the Oxford University Museum, coöperative work by L. H. Dudley-Buxton, D. Garrod, and others has appeared on the Neandertal skull found at Gibraltar in 1927. The Royal Anthropological Institute (London) sent J. H. P. Driberg to the Galla (northeast Africa). For the London School of Economics, R. W. Firth has gone to Tikopia in the Solomon Islands.

Researches in Australia were carried on by the Australian National Research Council, under the direction of A. R. Radcliffe-Brown (University of Sydney). W. L. Warner continued work with the natives of Arnheim Land (north Australia) and U. McConnell and D. F. Thompson with those of Cape York Peninsula (north Queensland). A. P. Elkin visited the Kimberley district, Western Australia. Prof. Shellshear (Hong Kong) made a comparative study of the brains of Australian aborigines, Chinese, and Europeans. A conference on the comparative study of basal metabolism was held at Sydney in May. Investigations of blood grouping in Australian natives is now being extended to the Maori by G. Phillips. Wide interest in the field is attested by the formation of anthropological societies in South Australia and New South Wales.

The National Museum of Canada (Ottawa) had H. I. Smith collecting in British Columbia and among the Blackfeet. C. B. Osgood visited the Hare Indians on the Mackenzie River for ethnological purposes, and W. J. Wintemberg, Labrador, New Brunswick, and southwestern Quebec for archaeology. J. C. B. Grant made an anthropometric study, with serum tests, of the Chippewaiian (Lake Athabaska). The Provincial Museum (Victoria) added W. A. Newcombe to its staff and obtained a Tlingit-Aleutian collection.

The Field Museum (Chicago) conducted four expeditions: archaeological work in British Honduras by J. E. Thompson, H. Field in the north Arabian Desert, and jointly with Oxford University to Kish (Mesopotamia). W. D. Strong visited Eskimo and Naskapi of Labrador. Six new halls of east Asiatic, Oceanic, and African collections were opened. For the National Museum (Washington), H. B. Collins investigated the archaeology of western Alaska, N. M. Judd that of Kentucky, and H. W. Krieger in Samaná, Santo Domingo.

The Bureau of American Ethnology (Washington) had J. P. Harrington continue research of the Chumash (California), J. N. B. Hewitt that of the Iroquois, F. La Flesche of the Osage, T. Michelson of Algonquian groups, J. R. Swanton of the Choctaw, and F. Densmore, the music of Menomini, Nitinat, and Winnebago. J. W. Fewkes was succeeded by M. W. Stirling as chief of the bureau. The Museum of the American Indian (New York) conducted several ethnological expeditions, viz., F. G. Speck to the Naskapi, F. Johnson to the Algonquian (Ontario). G. T. Emmons to southeast Alaska, W. Wildschut in Montana and Wyoming, E. H. Davis in Death Valley (Calif.), S. K. Lothrop in Guatemala, while M. R. Harrington investigated the archaeology of western Texas. General expeditions by H. S. Dickey went to the upper Orinoco River (Venezuela) and by G. Mason to Mexico and British Honduras.

The American Museum (New York) supported work at the Folsom site (New Mexico), G. C. Vaillant in Mexico, M. C. Kahn among the Bush Negroes of Dutch Guiana; E. M. Weyer excavated in the Alaskan peninsula, and A. Pond in the Gobi (Mongolia). At the Peabody Museum (Cambridge), E. Reynolds succeeded C. C. Willoughby as director. Archaeological work in southwestern United States was undertaken by S. J. Guernsey, N. Morss, and C. B. Cosgrove, G. Schwab and F. R. Wulsin visited Liberia and the north Congo areas, respectively.

The University of Pennsylvania conducted inquiries into Delaware Indian linguistics and ethnology, and Catawba linguistics through F. Speck. V. J. Fewkes worked on Pennsylvania archaeology. Similarly, local field work was undertaken by the University of Chicago, where E. Sapir also studied the Gwebo language (Liberia). C. E. Guthe of the University of Michigan made an archaeological survey of central United States. Both these institutions inaugurated instruction in anthropology under J. H. Steward and R. Linton respectively. For the University of Washington, M. Jacobs investigated the languages and ethnology of Kalapuya, Molalla, and Yonkalla in Oregon; T. Adamson, the Nootsak of Washington.

The Bishop Museum (Honolulu) has been continuing ethnographic studies in Polynesia: on Upolu and Savaii under P. H. Buck, on Kauai by W. C. Bennett, on west Maui by W. H. Walker, and on Molokai by B. Cartwright. F. Wood-Jones worked on the inheritance of mixed racial forms and J. H. Stimson on Polynesian dialects. Large collections were received from Guam, Samoa, and Tahiti.

The Dirección de Arqueología of Mexico was largely occupied with mapping and preserving the antiquities of that country. In addition, excavations were undertaken at the pyramid of Tenayuca and, in coöperation with the Carnegie Institute of Washington, at Chichen-Itzá, Yucatan.

The Huxley Medal of the Royal Anthropological Institute was awarded Baron Erland Nordenskiöld of Göteborg, Sweden. Dr. Oyartzum, curator of anthropology, Museum of Santiago, Chile, was awarded the gold medal of the University of Würzburg. Dr. R. R. Marett was elected Rector of Exeter College, Oxford. Dr. A. L. Kroeber, University of California, was elected to the U. S. National Academy of Sciences, and Dr. C. Cole, University of Chicago, was given an honorary doctorate of Science by Northwestern University.

The Twenty-third International Congress of Americanists was held in New York in September. The British Folk-Lore Society held an international congress in London in the same month, in celebration of the fiftieth anniversary of its foundation.

NECROLOGY. One of the leading Russian ethnologists, Leo J. Sternberg (b. 1851), died on Aug. 14. Like others among Siberian anthropologists, he was exiled for political activities to Sakhalin Island, where from 1889-99 he studied with Gilyak, Ainu, and Orok. Later he investigated the Gilyak and Tungus of the Amur River. He became head curator of the anthropological museum of the Russian Academy of Sciences and lecturer at the Geographic Institute and University of Leningrad. Eduard Hahn, professor at the University of Berlin, who died Feb. 24, aged 72, made important contributions to the study of early agriculture and animal husbandry. Holland lost G. P. Rouffaer (born 1860), a well-known student of the history of civilization in the East Indies. Pliny E. Goddard, curator of ethnology, American Museum of Natural History, died July 12, aged 58. He was widely known for his comparative studies of Athabaskan Indian languages. The same institution lost Charles W. Mead, honorable curator of Peruvian archaeology, on February 3, aged 82. W. C. Mills, curator of the department of archaeology, Ohio State Museum,

died January 17, aged 68. Mr. Mills was largely instrumental in building Ohio's archaeological survey into the most complete in the country. H. H. Wilder, professor of zoölogy, Smith College, whose interests also lay with prehistoric man, died February 27, aged 64.

ANTIGUA. See **LEEWARD ISLANDS.**

ANTIOCH COLLEGE. A non-sectarian co-educational institution at Yellow Springs, Ohio; founded by Horace Mann in 1853. The number of students enrolled for the autumn term of 1928 was 649, of whom 197 were women and 452 men. The faculty had 69 members. The productive funds of the institution amounted to \$243,831, and the income for the year was \$397,466. The library contained approximately 29,000 volumes. Antioch College is conducted on the belief that academic training alone does not fit the student for life, and is so organized that the student divides his time between school and practical work in the economic community. President, Arthur E. Morgan, D.Sc.

ANTI-SALOON LEAGUE OF AMERICA.

A federation of churches and temperance organizations in the United States, united against the beverage liquor traffic. It was established in 1895 by a coalition of the Anti-Saloon League of four States and the District of Columbia, and was the outgrowth of the Anti-Saloon League movement started at Oberlin, Ohio, in 1893 by Dr. Howard Hyde Russell. At the end of 1928 it embraced 49 State or Territorial Leagues and had affiliations with 40 other national temperance organizations, as well as with the World League Against Alcoholism (q.v.).

During 1928 the activities of the League were carried on by over 1500 representatives. The legislative work of the League included support of the Jones-Stalker bill to provide increased maximum penalties for the five offenses defined by the Eighteenth Amendment to the Constitution, namely: The manufacture, sale, transportation, importation, and exportation, of intoxicating liquors for beverage purposes. Hearings were held before the Judiciary Committees of each house, the bill was reported favorably at the first session of the Seventieth Congress, and was pending on the calendar of each house when the second session convened in December. The State Department announced that ratification of additional treaties for the suppression of liquor smuggling had been secured with Greece and Japan. These treaties were practically identical in terms with similar treaties previously consummated with other maritime nations. The league was much encouraged by the results of the presidential election, inasmuch as the Hon. Herbert Hoover, who opposed the repeal of the Eighteenth Amendment and declared himself for the efficient enforcement of the laws thereunder, and wished to see the policy succeed, won the election from Gov. Alfred E. Smith, of New York, who made modification of the prohibition law, and the amendment of the Eighteenth Amendment, to provide for the manufacture and sale by the State of alcoholic beverages, prominent issues of his campaign.

The League during the year issued statistics in which the statement was made that the consumption of intoxicants had dropped to a small fraction of its former total. *The American Issue*, published at Westerville, Ohio, is the official organ of the League, both a national edition and many State editions being published. The monthly

circulation was about one million copies. The national headquarters are at Washington, D. C. The officers for the year were: President, Bishop Thomas Nicholson, Detroit, Mich.; secretary, S. E. Nicholson, 370 Seventh Ave., New York City; honorary treasurer, Foster Copeland, Columbus, Ohio; comptroller and acting treasurer, H. B. Sowers, Westerville, Ohio; general superintendent, F. Scott McBride, Washington, D. C.; general manager of publishing interests and of the Department of Education, Ernest H. Cherrington, Washington, D. C.; attorney, Edward B. Dunford, Washington, D. C.

ANTI-SEMITISM. See **JEWIS.**

ANTI-TOXIN. See **DIPHTHERIA.**

ANTS. See **ZOOLOGY** under **Insects.**

APICULTURE. See **ENTOMOLOGY, ECONOMIC.**

APPENDICITIS. A. Fonio, a well-known surgeon of Berne, Switzerland, published a very exhaustive statistical article in the *Schweizerische medizinische Wochenschrift* for June 16, 1928, in which he seeks to show that appendicitis is very largely propagated from person to person, the intermediary being doubtless some one with a latent, mild or apparently recovered disease. He quotes no less than 17 examples of family epidemics in which anywhere up to 9 or more cases have come from the same household within a certain number of years. Hospital statistics often show that when large numbers of cases become cumulative they tend to come from certain localities to the exclusion of others. Direct transmission from one patient with an acute attack to another with the same outcome is not often suggested, but in practically half of all cases seen by the author there might well have been transmission by a "carrier" in the family suffering from a quiescent form of the disease. The practical importance of this paper is considerable; for when there is a tendency for cases to recur in the same family all the apparently sound members should be examined, their histories taken and their subsequent movements supervised. If there is any suspicion or evidence of a latent appendicitis, they should be subjected to appendectomy. In this way sources of contagion might be cut off and the incidence of the disease in small communities reduced.

APPLES. See **HORTICULTURE.**

AQUEDUCTS. See **WATER SUPPLY.**

ARABIA. A peninsula in southwestern Asia to the south of Syria, Mesopotamia or Irak and the Persian Gulf. The area is estimated at from 1,000,000 to 1,200,000 square miles, the higher figure including the Syrian Desert and the Sinaitic Peninsula. Estimates of the population range from 4,000,000 to 7,500,000. The divisions of the country in late years have been defined as follows:

(1) **HEJAZ.** Hejaz or the Kingdom of the Hejaz was an outgrowth of the World War and after a very precarious existence was compelled to submit to the domination of the Sultan of Nejd at the very end of 1925. During its rather brief career as an independent state its frontiers were always in a state of flux, never being definitely defined except on the west. The estimated area of the country is about 150,000 square miles and its population variously estimated at from 800,000 to 900,000. The population is largely nomadic, although in recent years some villages have been settled where it has been possible to cultivate the soil successfully. The principal cities are Mecca, with a population of

from 50,000 to 60,000 (this is the holy city of Islam, and attracts about 100,000 pilgrims annually; these pilgrims represent the chief source of income of the government); Medina, also a holy city and the seat of Mohammed's tomb, with a population of 15,000; and Jedda, the seaport for Mecca, with about 20,000 inhabitants.

Agriculture in the Hedjaz is not generally practicable, on account of the excessive heat, but in the oases there are large crops, the chief one of which is dates, and in the plateau region wheat, corn, barley, millet, lentils, coffee, and tobacco are raised. There are raised here the famous horses, many of which are sold abroad. The chief exports are hides, wool, and gum; the chief imports, foodstuffs and building materials. The King in 1928 was Ibn Saud, with the title of King of Hedjaz and Sultan of Nejd and its dependencies.

(2) **SULTANATE OF NEJD.** This state is considered the most important unit in the Arabian peninsula and occupies the highland of central Arabia between the Persian Gulf on the east and the Hedjaz on the west. It is ruled by the Saud dynasty, which represents the old Wahabite empire, founded in 1745. In 1928 the population was estimated at 3,000,000. The chief products of Nejd are dates, wheat, barley, fruits, hides, wool, horses, camels, donkeys, and sheep, while the chief imports are piece goods, tea, coffee, sugar, and rice. Reigning Sultan in 1928, Abdel-Aziz ibn Saud.

(3) **JEBEL SHAMMAR.** An emirate north of Nejd and since 1921 an integral part of the Sultanate of Nejd, by which it was captured and annexed. Population, estimated at 250,000. Capital, Hail.

(4) **ASIR.** The principality of Asir lies on the western coast between the Hedjaz and Yemen. Estimated population, 1,000,000; capital, Sabiyah. Since October, 1926, Asir has been under the Sultanate of Nejd.

(5) **IMAMATE OF YEMEN.** The area of this state is about 75,000 square miles and the population is variously estimated at from two to three millions. The capital is Sanaa, with a population of about 25,000. Cereals and coffee are produced extensively. Hides form one of the chief articles of export. Ruling Imam in 1928, Yahya Mohammed Hamid ed-Din.

(6) **SULTANATE OF KOWEIT.** This territory, subsidized by the British, is on the northwestern coast of the Persian Gulf, and has an estimated population of 50,000. Sultan in 1928, Ahmed ibn Jabir al Subah.

In addition to the above there are comprised within the limits of Arabia the British protectorate of Aden and the Sultanate of Oman, also the emirate of Kerak or Transjordan. (See **ADEN, OMAN, TRANSJORDANIA**).

HISTORY. Arabia passed through a fairly quiet year, considering the miscellaneous collections of tribes and nationalities that compose the kingdom of Ibn Saud. On the last day of the year it was reported in the press that he had decided to resign his kingship and become an ordinary citizen of his country. The leaders of the opposition as well as his own followers pleaded with him not to take this radical step. The report stated further that he had acceded to the wishes of his petitioners and had decided to remain as king but with the understanding that he was to have virtually a free rein in the conduct of the kingdom. Possibly Ibn Saud's resignation was a

dramatic move to bring about the desired end it accomplished.

Early in the year there were reports of several uprisings against the King and his Government because of the heavy taxation and there were many sensational reports to the effect that Saud was contemplating an attack on British territory in Palestine, Transjordan, and Mesopotamia, because he believed that these territories were controlling territory that actually belonged to himself. Nothing serious came of these reports, however, although several conferences were held between British authorities in the mandated territory and Ibn Saud, without reaching any satisfactory agreement over the control of the borders.

ARBITRATION, INDUSTRIAL. See LABOR ARBITRATION AND CONCILIATION.

ARBITRATION, INTERNATIONAL. Treaties of arbitration were negotiated by the United States in 1928 with the following countries: France, signed Feb. 6, 1928; Germany, signed May 5, 1928; Italy, signed Apr. 18, 1928; Finland, signed June 7, 1928; Denmark, signed June 14, 1928; Austria, signed Aug. 16, 1928; Czechoslovakia, signed Aug. 16, 1928; Poland, signed Aug. 16, 1928.

Treaties of conciliation were negotiated in 1928, with the following countries: Germany, signed May 5, 1928; Finland, signed June 7, 1928; Austria, signed Aug. 16, 1928; Czechoslovakia, signed Aug. 16, 1928; Poland, signed Aug. 16, 1928.

Appointments to the Bryan Peace Commissions (see YEAR BOOK, 1927) were made in 1927 and 1928 as follows: On the *Franco-American Commission*, Senator Underwood as American national member, on the *Anglo-American Commission*, Senator Lenroot, as American national member; M. Jusserand, as American non-national member, on the *Norwegian-American Commission*, M. Hadji Mischeff, Bulgarian Minister in London, as American non-national member, and M. Edwin Alten, Justice of the Supreme Court of Norway as Norwegian national member.

The text of a series of model conventions for the pacific settlement of all international disputes was adopted by the Committee on Security and Arbitration of the League of Nations at Geneva in July. The idea of the conventions was that general signatures would hasten disarmament. The conventions provide for recourse to conciliation in the first instance and, if that fails, provide that all disputes shall be settled by judicial means or arbitration.

Detailed discussion took place at this third session of the committee regarding the various conventions for arbitration, conciliation, and security that would provide alternatives for war. Work was continued on the principle that, important as were the multilateral treaties to outlaw war, it was still highly desirable to take every possible step to make war both unnecessary and unprofitable. In addition to drafting these model bilateral conventions, on the same lines, the committee devoted itself to the study of the German proposals for the strengthening of the means of preventing war. From the last named was drawn up a model treaty whereby the signatory nations undertake, in the event of a dispute arising between them and being brought before the council, to apply the provisional recommendations of the council relating to the settlement of the dispute and designed to prevent any measures being taken by the parties which

might have a prejudicial effect on the execution of an arrangement proposed by the council, and to refrain from any measures which might aggravate or extend the dispute. In the event of hostilities breaking out, the parties undertake to comply with the recommendations which the council may make for the cessation of hostilities, prescribing in particular the withdrawal of forces having penetrated into the territory of another state or into the demilitarized zone.

This model treaty was adopted by the committee on first reading and submitted to the various governments with the request that they give the instructions to their delegates to the next Assembly, where the reports of the Arbitration and Security Committee was to be discussed. In regard to the question of financial assistance for state victims of aggression, the committee emphasized its importance and value as a means to security and disarmament. Also, the committee felt that states not members of the League might participate in treaties of non-aggression and mutual assistance. At this session Turkey was represented for the first time, but up to the end of 1928 the United States had not taken part in this work.

An Italo-Turkish treaty of "neutrality, conciliation, and judicial regulation" was signed in Rome on May 30. It was the result of negotiations which had been in progress between the two countries for some time. An impetus to these negotiations was given early in April, when the Turkish Foreign Minister, Tefik Rushdi Bey, on his way from the meeting of the Disarmament Committee at Geneva, had an interview in Milan with Premier Mussolini. Several important questions were discussed at the Milan meeting, notable among them being that of Turco-Italian relations, Turco-Russian relations, and the possibility of Turkey's entry into the League of Nations. The treaty consists of five articles, while the annexed protocol, dealing with the machinery of conciliation and arbitration, contains nine articles. The treaty was to remain in force for five years after ratification, which was to take place as soon as possible, and, if not denounced six months before the expiration of this term, the treaty would remain in force for a further five years.

A treaty between Spain and Portugal, providing for the obligatory arbitration of all disputes without exceptions, was signed January 21.

The arbitration of the question as to the sovereignty over the island of Las Palmas, submitted to arbitration by the United States and the Netherlands in 1925 was decided in favor of Holland on April 2. Prof. Max Huber, a Swiss statesman, acted as arbitrator. The island is a small one lying between the Dutch East Indies and the Philippines.

The boundary between Panama and Costa Rica, which had been in dispute since 1921, was the subject of direct negotiations between the two governments, and would probably be settled amicably very shortly.

Copies of draft treaties of arbitration were handed by the United States Secretary of State to the ambassadors of Germany and of Spain on March 12, thus beginning negotiations for treaties with those countries, similar to the treaty with France, just signed.

Newton D. Baker was appointed by President Coolidge to be a member of the Hague Court

for International Justice in succession to the late Oscar S. Straus. The other three members were Elihu Root, John Bassett Moore, and Charles Evans Hughes.

The Hague Tribunal appointed Prof. M. Sindball, formerly of the University of Copenhagen, as arbiter of the Mexican-American Claims Commission, succeeding Rodrigo Octavio, of Brazil, who resigned after the famous Isabel decision favoring Mexico and subsequently Dr. C. Van Vollenhoven, the Dutch jurist, also withdrew. The two governments unable to agree on the appointment of an arbiter, referred the selection to The Hague Court. Professor Sindball was a former Minister of Justice of Denmark.

The ancient boundary dispute between Guatemala and Honduras at the end of the year was no nearer settlement than it was when the United States undertook to effect a pacific adjustment. Secretary Kellogg's proposal that the two countries submit their claims to arbitration before the Central American Tribunal, established under the 1923 treaty, was accepted by Guatemala on July 18, but in August Honduras rejected it, on the ground that the "make-shift" organization of the Tribunal unfits it for that purpose. The American State Department was disappointed by this failure, and it was suggested that Honduras might be given time to reconsider its decision. No comment was made on the offer of Honduras to accept arbitration by the President, or Chief Justice, of the United States or any other tribunal established in permanent or regular form.

TACNA-ARICA. According to an announcement of the United States Department on July 13, Chile and Peru had accepted unconditionally the suggestion of the United States that they resume diplomatic relations. On October 10, the Secretary of State announced that the Tacna-Arica Boundary Commission, which for three years had been trying to fix the boundary between Peru and the northernmost province of Tacna, would be suspended for four months. It was expected that the resumption of diplomatic relations after 17 years of separation between the two countries would enable them to settle their long-standing dispute through the ordinary diplomatic channels.

In a statement in July, Foreign Minister Conrado Gallardo expressed Chile's recognition of the generous invitation of Secretary Kellogg and announced that:

Chile is marching directly to seek an accord with Peru by new ways and to make firm the bases that make for greatness and prosperity of both peoples.

We have lost forty years in Byzantine discussions and the national economy of both countries has sacrificed thousands of millions because commercial interchange has been almost nothing, even though Chile has bought from Peru to the value of 500,000,000 pesos during the last ten years.

The initiative of 1921 was unfortunate and an exchange of notes produced only an agitation of public opinion in both countries. The agreements at Washington and plebiscitary gestures resulted in separating Chile and Peru more than the previous diplomatic offensive which neither won the support nor the favor of sensible men.

Today we want to attain the solution by different methods, creating a cordial atmosphere, interchanging friendly ideas privately without magniloquent speeches, but with serious thought.

In Peru a speech delivered in the Chamber of Deputies by Representative Carlos Valverde, of the Commission of Foreign Relations, is said to have voiced the opinion of his Government. Mr. Valverde is quoted as saying:

Peru gives a new proof of its pacific policies in accepting the suggestion advanced by the arbitrator, though it is thoroughly convinced, as is the arbitrator, that this step does not affect our rights. Peru hopes that Chile will reciprocate with the same sincerity and lofty purposes, in order to reach a solution harmonious as well as just. We trust that Chile will not hold on to her past mistakes. Times have changed. An irresistible current of harmony sweeps over the Americans, and nobody can oppose it without falling into an abyss. We have faith in the solution of the conflict because we know that our rights will be well defended by our Government. Let us, then, welcome the resumption of relations and welcome also the Ambassador of Chile if he brings with him, as the American continent and ourselves hope, peace and justice. The hour of continental justice and harmony is approaching, and our duty is to cooperate to this end.

The Peruvian Congress approved unanimously the creation of an embassy in Chile, and voted at once the necessary credits. Chile opened to trade the frontier between Tacna-Arica and Peru, which was closed when plebiscite proceedings were in preparation.

See **KELLOGG TREATIES; LEAGUE OF NATIONS. BOLIVIA-PARAGUAY DISPUTE.** This controversy which late in the year began to assume a serious aspect as discussed under **BOLIVIA**, section on *History*.

TRIPARTITE CLAIMS COMMISSION (United States, Austria, and Hungary). The United States in 1921 negotiated separate peace treaties with Austria and Hungary in terms similar to those of the treaty with Germany (see **YEAR BOOK FOR 1927**). Hon. Edwin B. Parker, of Houston, Texas, was the sole commissioner selected by the three governments to pass upon the claims; he also was serving as War Claims Arbiter appointed by the President under the Settlement of War Claims Act of 1923 adjudicating claims of German, Austrian, and Hungarian nationals against the United States for ships, patents, and a radio station taken over by the United States during the World War, and was also umpire of the Mixed Claims Commission, United States and Germany. Robert W. Bonyge, of New York, was American agent, representing the Government of the United States on behalf of the claimants; Dr. Alexis de Boer, of Budapest, and a judge of the supreme court of Hungary, was Hungarian Agent; and Dr. Ernst Prossinagg, of Vienna, the Austrian agent, the latter two defending the cases on behalf of their government. Over 90 per cent of the cases (1631 in number) had been disposed of and the commission was hopeful of winding up its task by the end of 1928. The commission had issued administrative decisions disposing of the more important questions, following generally the decisions of the umpire of the Mixed Claims Commission, and opinions in individual cases which would serve as a guide in disposing of groups of similar claims. It was estimated that the awards would not exceed \$1,000,000 against Austria and \$500,000 against Hungary, including interest through 1928. These awards were to be paid through the Treasury of the United States under the Settlement of War Claims Act of 1928.

CLAIMS AGAINST GREAT BRITAIN. The claims of American citizens against Great Britain had received the earnest consideration of the Department of State since the conclusion of the War. An exhaustive examination of these claims, particularly those arising out of the War, was made and completed before the Agreement of May 19, 1927, was concluded. The announcement of the terms of the agreement was released on

May 31, 1927. In addition to the announcement which appeared in the public press, a copy of the agreement was sent to each claimant of record, together with a letter inviting attention to the terms of the agreement and to the status under the agreement of the claim in question.

No mode of procedure other than that indicated by the text of the notes was prescribed. The department considered each claim filed with it, solely on its merits as developed and established by the claimant in the same manner as it considered the claims against other foreign governments. Claims not susceptible of development and proof under the recognized principles of international practice and the terms of the agreement are disposed of by the department after investigation and study and the reasons for the disposition communicated to the claimants in the form of a letter. Claimants, however, are free in all cases to file amended claims and further proof. When any particular claim is developed in all its several aspects and proved to be meritorious in accordance with the terms of the agreement, appropriate action is taken by the department as contemplated by the agreement. See KELLOGG TREATIES; LEAGUE OF NATIONS; WORLD COURT.

ARBORETUM. See FORESTRY.

ARCHÆOLOGY. If possible the year 1928 witnessed greater activity in archæological exploration than ever. At Sakkarā, near Cairo in Egypt, excavations on the site of King Zoser's pyramid revealed hitherto unknown chambers in the burial apartments under the structure. One room proved to be filled with a quantity of stone vessels of various shapes, chiefly of diorite and alabaster. Some bore the names of other kings than Zoser. In one of the rooms, all of which were lined with blue tiles, were discovered three limestone stelæ decorated with fine reliefs belonging in the Third Dynasty style of King Zoser. These rooms are practically duplicates of those of the Southern tomb which in all probability was originally intended for the King himself.

South of Assiut the British Museum Expedition has found 250 Badarian burials, which throw considerable light on this little-known period. By these discoveries it has been established that these Badarians are older than the pre-dynastic Egyptians and are not a contemporary influx. Much pottery, some finer than any yet recovered in any other period, has shown up along with flint implements and polished stone axes, and many pieces of trumpet-shaped mouthed vases of black ware decorated with white-filled incisions. Discovery of grain revealed that at this time the inhabitants had become agriculturalists. At Deir El-Bahari, in the area previously occupied by the Cook rest house, was uncovered, at a depth of sixty feet, a quarry in which are the fragments of statues once belonging to Queen Ufatshepsut but diligently destroyed by her husband, Thothmes III.

The tomb of Tutankhamen continued to give up an amazing amount of treasure. The fourth chamber, the last to be opened, showed a condition of extreme disorder occasioned by dynastic robbers. Among the remarkable finds made in the mass of material thrown about at random by the thieves was a small casket covered with an exquisitely cut veneer of ivory. One panel represents the young king and his wife in a

garlanded pavilion. Another interesting discovery was that of a nest of coffins (the outside one about 30 inches long), in the innermost of which, itself of gold, was a small gold statuette. The innermost coffin contained a lock of the queen's hair. In another box were carefully preserved model tools of iron showing that at this time the metal was considered more or less precious. In the third chamber, Carter made a remarkable find of a fleet of 18 small boats in perfect condition. These were used by the king in passing across the river of death.

Possibly one of the most interesting recent finds in the tomb was that of the king's bow-case, which was over five feet in length and made of a light durable wood covered with fabric which in turn was overlaid with marquetry. The portions in relief are in gold laid in stucco: the flat part is done in different colored barks, leather and even the iridescent sheaths of beetle's wings. The chief subjects represented are taken from the chase. In the case were three composite bows of which the gelatinous cores had dissipated into a viscous state.

At Luxor what seems to be the nucleus of the palace of Rameses III was uncovered. One room seems to have been for the king. In it was a dais for his throne. Adjoining were a bedroom and bath. Next to the king's apartments was the queen's suite also with a large hall containing a dais. There were three apartments reserved for the women of the harem.

At Balata, just east of Nablus in Palestine, the Germans had made discoveries which have modified the view previously held that this was the site of Schechem. The finding of a blunt-topped pyramid 131 feet square and erected on a base 16 feet high was significant. Near it were found cubical cellars, resembling corn granaries. Below the fortifications were found older ruins dating about 1700 B.C. The ruins covered five acres. Evidence appeared to prove that the place, destroyed about 1300 B.C., was not Schechem proper but Migdol Schechem. On Mt. Gerezim the Germans also excavated near to the Samaritan place of sacrifice. Here was uncovered a Christian church dating 384 A.D.

At Beisan, Palestine, the University of Pennsylvania Museum Expedition made discoveries corroborative of the Book of Joshua. The work this year was on the level of Thothmes III, Seti I, Rameses II, and Amenhotep III. The tower fort was uncovered just west of the temple of Amenhotep III. This proved to be the practically complete foundations of a Canaanite fort. In its present condition it consists of four rooms with signs that there was originally another room. The outer walls on an average ran to seven feet in thickness. The main walls of the fort were of sun-dried brick. In the courtyard west of the residence was found a great silo with a capacity of about 9000 gallons. At Beth-Shemesh, Dr. Elihu Grant of Haverford College made discoveries which carry the age of the town back possibly 1000 years. Objects dating from the bronze age were found.

The Palestine Exploration Fund Excavations on Ophel, at Jerusalem, revealed a necropolis which may be the site of the kings of Judah. One of the most important finds was a great gate in the western wall of the City of David. It was flanked by two massive towers, the wall of the northern one being twenty-six feet thick. Diggings on the temple hill brought to light

many jar-handles with short alphabetic inscriptions. By the Sea of Galilee was found a piece of a stele of Thothmes III which speaks of the repelling of the Mitanni. The place of discovery of the stele was Tel el Oreimeh.

At Hazor of northern Palestine, the Liverpool Institute of Archæology was active. The site consists of two parts: a mound where stood the Acropolis, and an open space about 1000 meters by 300 meters, which appears to have been a camp. This enclosure was protected by walls of earth. Most of the material recovered belongs to the bronze age (c. 2000-1600 B.C.). There is not much evidence for the first Graelite period. In the time of Solomon there seems to have been a revival. The walls of King Solomon's time rest upon earlier Canaanite work. In the Acropolis were discovered the remains of a building with monolithic columns. It seems that the place was destroyed about 700 B.C.

Work at Bagdad was continued by the American School of Oriental Research and Harvard University. Already eighty-four rooms, which contained some 1200 tablets, had been cleared. Also the excavators recovered the oldest suit of armor yet found. The site of the excavations is Yargon Tapa, about 350 miles from Ur. At Kish, at the lowest levels, were found pictographic tablets which show that the language is not true Sumerian. This establishes the fact that the first inhabitants of Mesopotamia were not Sumerians. They may have been related to the Elamites. The tablets date before 3500 B.C. Forty-three feet below the surface of the mound were found two chariot wheels dating about 3200 B.C. They were wooden disks about two feet in diameter. Traces of harness were also found.

Near Kharsabad, the American School of Oriental Research of the Guggenheim Foundation and Dropsie College cut a trench through the mound on this site. Three civilizations were revealed. From the lowest level came painted pottery of the first culture of Ur and Suza. Also appeared figures of a steatopygas goddess and a string of five ivory beads. Traces of child burials also were discovered. The second stratum still belonged in the stone or æneolithic age, preceding the bronze age. The ware of this period was incised and not painted. At the top of the level representing this stage was found a temple of baked brick with a garden and traces of a water system. A number of votive toys, including a covered wagon of clay drawn by dogs, were found. The third stratum brought a people who destroyed the culture of the temple period. The city is now surrounded by cyclopean walls. This is the beginning of the bronze age, about the time of Sargon I (c. 3750 B.C.).

The most spectacular finds in Mesopotamia have been made on the site of ancient Ur. Here was discovered the grave of Mes-Kalamdug, in which were four fine gold vessels: two plain, two fluted. The plain one was a lamp, the other was a beautiful cup. These are among the first gold finds made in Mesopotamia. But most remarkable of all was a twelve-stringed harp and a chariot. The upright part of the chariot was sheathed with gold. The sounding box of the harp was decorated with mosaics. On either side of the chariot were three golden lion heads with manes of lapis lazuli and shell. On the pole a rein-ring of silver surmounted by a realistically designed donkey. The work belongs

to about 3500 B.C. Further exploration brought to light a large pit. On a ramp leading down to it was found the bodies of six soldiers who had been slain to act as guards of the king, who was buried nearby. Two clumsy four-wheeled carts (at least traces of them) turned up at the end of the pit. The wheels were solid wood with leather rims. There were three oxen to each cart, and dead grooms lay by the animals' heads. Across the seats were the bodies of the drivers. Elsewhere around the pit were the skeletons of some fifty other persons sacrificed to supply the needs of the dead master. Near the tomb proper lay eleven women of the harem dressed in full regalia. Over the bodies were two statues of bulls of wood with copper and gold heads. The tomb itself was arched with brick and terminated in an apse with a semi-dome. These are important bits of architectural evidence.

Probably the most spectacular discovery was that of the tomb of the Queen, Shub-ad, from which was recovered her remarkable headdress of gold, made up of leaves of willow and mulberry with the petals inlaid with lapis and white shell. This tomb was next to that of the king and had been undisturbed. About 150 objects were recovered from it. About the only thing left by robbers in the king's tomb was a complete little silver boat.

In Persia, Prof. Ernst Herzfeld reported that he had discovered the site of the city of Pasargadae. It is identified as standing on a plateau ten miles square overlooking the plain of Marghab. The place consisted of three separate areas, separated by some kilometers. One of these areas belonged to the palace, another to the temples, while the third was the town proper. Four palaces stood in a spacious walled park. The temple was constructed with six stages or terraces.

At Argos in Greece, Dutch scholars found a stele dating 450 B.C., which contains part of an inscription embodying an agreement between Knossos and Tylessos in Crete. Argos acted as arbiter. The inscription states that should either be attacked by an enemy who proved to be a friend of the other, this other shall remain neutral. Otherwise each shall come to the other's help. Out of the sea, off Artemesium has been brought up a bronze Poseidon 8 feet in height. Excavations near the home of Isadora Duncan in the suburbs of Athens brought to light a grave stele of the fifth century suggesting that here was an unknown cemetery.

At Corinth Dr. Shear continued his work upon the main street heading from the theatre to the market-place. It is 12 feet wide with sidewalks 3 feet wide raised 8 inches above the level of the road. The street is paved with pink limestone. Besides this, the season's work completely uncovered the stage of the theatre and the east parados as far as the exit. The walls of the parados were found preserved to a good height. Nearby was found a life-sized marble statue of a Roman Senator dating in the fourth century A.D. The parados was found to open into a paved street some 60 feet from the orchestra. This street ran north and south at right angles to the parados. To the north this street opens out into a plaza 14 x 17 meters. About 5000 bronze coins were found in a stratum of burned material lying above the pavement for a distance of some 10 meters from the parados. The coins so far cleaned date from the second to

the fourth centuries A.D. Besides the theatre, thirty-three undisturbed graves were opened in the cemetery to the northwest of the theatre. From them came about three hundred various objects. They date from the sixth to the fifth centuries B.C.

In the island of Cyprus the Swedish Archaeological Expedition opened twenty-three graves of the early and middle copper age (3000-1600 B.C.). Two are important. In one were bodies of noble warriors. In the other a royal burial. In the first were 33 weapons. From the tombs came evidence that colonists came to Cyprus in the copper age from Asia Minor. There is also evidence that Mycenaean Greeks came in before the close of the Mycenaean age.

The most notable excavations conducted in Greece in 1928 were those under the direction of Prof. David M. Robinson of Johns Hopkins University. The work was made possible by friends of the University. The site chosen is that of Olynthus located about forty miles south of Saloniki, in Macedonia. It was found that the city covered at least three hills and had a population of probably over 50,000 people. The excavations supplied valuable data for the history of Greece in the fifth and fourth centuries B.C. At the south end of the first hill was found an important neolithic settlement with a prehistoric kiln and much small material. The chief ruins, however, are those of houses of the period from 479-349 B.C., when Philip destroyed the place. No Hellenistic or Roman remains appeared. The chief areas dug were the fortress, the agora, the factory area, and the wealthy residential part. The barracks were often stored with huge vases about six feet high. In the shops were found about six hundred coins which had been dropped when Philip's soldiers broke in to loot. The residential quarter was the most interesting. There was uncovered a fine street 10 feet wide with gutters on either side. Complete plans of at least eight houses have been recovered. In the houses were found beautiful red-figured vases. One house had a little museum for vases, and a bath room. Several bath tubs were discovered—a sort of prototype of a Victorian hip-bath. Mosaics also were found in some of the houses. The work lasted from February 17 to June 2.

At Canosa, in Italy, several tombs were found. Three contained gold objects. One skeleton seems originally to have been wrapped in a fabric made of asbestos and embroidered with gold. At Casenga, a huge Roman building has been excavated. In it were found many bronzes, vases, etc.

During the winter most of the work at Herculaneum consisted in removing the fifty feet of hardened mud which covers the site. The major efforts were centred upon an imposing building which was located in February. Excavated as far as the ceiling of the first floor, it seems to have been a public office. It was a large structure running on three sides of a rectangular plot. A portico looks upon what was probably a garden. The rooms already cleared show mosaic floors, frescoes, and elaborate stucco decoration. At the windows were artistic iron grilles. A wooden staircase almost intact was found. A number of pieces of sculpture were discovered.

The first story of the House of the Skeleton was cleared to the height of five meters. It has a balcony overlooking the lower part.

Excavations at Perugia revealed parts of the Etruscan city wall and what appear to be parts of an Etruscan temple. At Piombino an Etruscan tomb of the seventh century was located. It is cylindrical and surmounted by a conical dome which overhangs the tomb to keep off the rain. Inside were four sarcophagi with remains of skeletons and jewelry, four helmets, two shields and many knives and spears.

In Rome, Ricci, in demolishing the Caserma di Magnapapoli, found that the building was really an ancient Roman structure. It stands to the height of three stories and seems to have been a kind of stock exchange. Twelve shops are still preserved in the first floor and others on the second; on the third a large hall about fifty feet high. The staircases and galleries are in good condition. Near Tivoli, Parabeni found a head of a girl which he believes to be a copy of a work by Calamis. It came from Hadrian's Villa. At Liptis Magna (Africa), Bartoccini was engaged in clearing the amphitheatre.

At Buetzow, in Mecklenburg, workmen in digging a cellar found a stone circle with markings showing careful observations on the sun's positions at various seasons of the year. The ruins are dated in the twelfth century B.C. At Gräsbjerg, in Austria, excavations in the neolithic site continue revealing hitherto unknown civilizations. Some of the pits were found to be houses. Bones of sheep, pigs, horses, dogs, rarely bears, and also fish were found. At Guntramsdorf, near Vienna, three Celtic graves of the La Tène epoch have been discovered.

Near Seville, in Spain, a Roman road was uncovered on the site of ancient Italica, also the foundations of a Roman house with fine mosaic floors.

England was fairly active in archaeological exploration. At Bournemouth (Haddens Hill), sixteen bronze-age burials were found. At Caerhun, excavations on the site of the Roman fort of Kanavium continued. The *prætentura* was located, and the south gate cleared. In the governor's house were found coins of the time of Domitian, Nerva, and Trajan. The *prætorium* also was uncovered. At Chester a Roman fort was found in the Deanery field. Foundation walls, floors, and hearths of individual rooms were exposed. At Sydney, on the Severn, a Roman temple of the otherwise unknown god, Nodens, was found. This deity seems to have been a god of the chase. The temple was erected as late as the fourth century A.D. It includes a triple shrine. At Mount Vernon, near Glasgow, was found a bronze-age cemetery. The site dates about 4000 years ago.

ARCHITECTS, THE AMERICAN INSTITUTE OF. The national organization of the American architectural profession, founded in 1857. It is governed by officers and a board of directors elected by and responsible to the delegates from the 58 chapters, assembled at the annual convention. The objects of the Institute are to organize and unite in fellowship the architects of the United States, to combine their efforts so as to promote the aesthetic, scientific, and practical efficiency of the profession, and to make the profession of ever-increasing service to society, and to spread an understanding of art and service among the people. Its activities include: devising methods for improving and extending architectural education, not only in the universities but in the lower schools; secur-

ing proper laws for the registration of architects in the various States; developing a service for architects which will give them for their actual problems data relative to building materials and methods obtainable from no other source; maintaining a public information service to tell the prospective builder the financial as well as the aesthetic service of the architect. The Institute maintains active standing and special committees on various branches of its work and allied fields. The directors and executive committee hold quarterly meetings in various parts of the country and the regional directors keep in active touch with the work of local chapters throughout the year.

At the sixtieth and sixty-first annual conventions of the Institute, a large measure of attention was given to the discussion of architecture as an art and to the development of a plan for bringing about real working collaboration between the architect, the landscape architect, the painter, the sculptor, and the craftsman. At the sixtieth convention, held in 1928, the board of directors reported that under the conditions of the French Traveling Fellowship, through the gift of Julian Clarence Levi, of New York, the second appointee, Maurice Chauchon of Paris, was in the United States to study. Recommendations were made by the committee on public information relative to the constructive development of the publicity system inaugurated in 1926, and another report was rendered, by the committee on the plan of Washington and Environs, calling upon the local chapters to do their part in influencing Congress to effect certain improvements to insure the future greatness of the National capital.

The committee on education reported on the art courses given under the grant of the Carnegie Corporation, by which the Institute received \$10,000, which enabled the committee to invite 20 colleges to take courses at the Fogg Museum of Harvard University. Under this plan colleges were invited to send to Harvard their best art teachers, to receive a special intensive course in the fine arts, which they in turn were to reproduce in the following year to the students in their institutions, in an effort to educate the public to a more intelligent interest in and knowledge and appreciation of architecture and the other fine arts. In addition to the reports of the various committees, numerous lectures and addresses were given as follows: Walter S. Brewster on "The Layman as Architectural Collaborator"; Royal Cortissoz on "Tradition"; Everett V. Meeks on "Collaboration Between the Arts in Art Education"; Ferruccio Vitale on "Environment in Relation to Architecture"; and F. R. Watson on "Ideal Auditorium Acoustics."

The endowment fund capital of the Institute amounted to approximately \$75,000, the income from which was devoted to the maintenance of the Octagon House in Washington; the property and funds totaled \$338,625.87, of which \$46,176.16 belonged to the Waid Educational Fund, the income being used to defray expenses of lecturers sent out to various States and to preparatory schools. An additional \$3000 was added to the fund through the gift of D. Everett Waid. The Allied Art Medal of the Institute was awarded to H. Siddons Mowbray, posthumously, for distinguished achievement in mural painting, and the Craftsmanship Medal to William D. Gates

for distinguished achievement in ceramic art. The membership numbered more than 3000 of the 10,000 practicing architects in the United States. The following were made Honorary Corresponding Members: Bernado Morales, of Santiago, Chile; Alberto Coni Molina, Paul J. Alvarez, Francisco Squirru, and Raul J. Fitte, of Buenos Aires, Argentina; H. P. Cart Loxontaine, London, England; M. Littman, Stuttgart, Germany; and Peter Behrens, Vienna, Austria; while 10 Honorary Members were announced.

Officers for 1928-29 were: President, C. Herrick Hammond, Chicago, Ill.; first vice president, J. Monroe Hewlett, New York; second vice president, Wm. J. Sayward, Atlanta, Ga.; secretary, Frank C. Baldwin, Washington; and treasurer, Edwin Bergstrom, Los Angeles. The Institute publishes the *Journal of the American Institute of Architects*, a monthly; the *Handbook on Architectural Practice*; a *Structural Service Book*; *The Significance of the Fine Arts*; the *Standard Contract Forms*, which are in widespread use throughout the country; and documents on the ethics of the profession. Its headquarters are located in the The Octagon, Washington, D. C.

ARCHITECTURE. The movement toward a free and modern type of architectural design so noticeable in Europe during the past few years has continued unabated during 1928, and so extended its influence as to be one of the great dominating forces in architecture throughout the world; particularly marked was the progress of this movement in America. This has not meant, however, the uncritical acceptance of the more extreme and doctrinaire types of modernist fanaticism; on the contrary, in many parts of the world the more angular and mechanistic types of modern building have tended to disappear; the movement is gradually being realized as a force that liberates design from slavery to archaeology and cultivates free creation without necessarily imposing a new servitude to so-called modernistic detail.

AMERICA. Building conditions were erratic; some localities boomed, some slumped. In general, the tendency was toward a reduction in the amount of speculative building and an increase in other fields; the overbuilding of the past few years in certain types of work caused an inevitable reaction; moreover, the tremendous bull market on the New York Stock Exchange during the autumn absorbed large amounts of cash which would ordinarily have gone into new building.

Nevertheless, the construction of office buildings continued; in certain places it even increased, as, for instance, in the enormous change that was going on in the Grand Central Terminal zone in New York, where one fifty-six story building was nearing completion and several others, almost as large, and one even higher, were under construction.

The most remarkable of these office buildings is the Chanin Building, by Sloan and Robertson. In this, setbacks from a rectangular base lead to a high tower whose deeply buttressed top is the most successful part of the composition. The whole is treated in a boldly modernistic manner, with a frieze of gigantic, conventional foliage near the bottom, whose scale and relief seem ill-related both to the simple brick piers above, and the delicate, ornamented bronze band below. Much more conventional, but more

convincing, because of the perfect harmony of the material and its detail, is the lavish, Gothic, limestone-faced mass of the building for the New York Life Insurance Co., by Cass Gilbert, on the site of the old Madison Square Garden. This, detailed in a free, late Gothic style, is particularly happy in the simple yet elegant treatment of its lower portion and the arrangement of its first setbacks; the central tower with its pyramidal top is less sure in silhouette.

Quite as lavish as the New York Life Building is the Fisher Building in Detroit, by Albert Kahn. This enormous structure is brilliantly massed, with rhythmically designed setbacks leading up to a superb tower. Within its walls are contained, not only a large office building, but also a moving-picture house seating 3000 people (the theatre designed by Graven and Mayger) and an eleven-story garage with space for over 1000 cars. The whole is built with the greatest richness of material and there is an exceptional use of color. It is a brilliant and beautiful thing.

In Cleveland, an office building was combined with the railroad station—the Terminal Tower Building, by Graham, Anderson, Probst & White. It has a strong and simple outline with a top distinctly reminiscent of the Municipal Building in New York, and is treated in a dignified and monumental classic style. Noteworthy also are the Toronto Star Building in Toronto, by Chapman and Oxley, and, in Montreal, the building of the Royal Bank of Canada, by York and Sawyer and S. G. Davenport, Associated. This is typical of the American bank tradition, monumental, classic, well proportioned, and dignified, based strongly on Italian Renaissance precedent.

The most noteworthy of the industrial buildings are the Mail Order Stores Building of Sears, Roebuck & Co., at Los Angeles, by George C. Nimmons & Co., and the Schrafft Candy Factory at Charlestown, Mass., by Lockwood, Greene & Co. The Sears, Roebuck Building is of a simple and direct modernistic type of concrete design, with an effective cresting and tower; the Schrafft factory is in modified Gothic, admirably suited to its fenestration.

Few important hotels or apartment houses of unusual distinction were completed during 1928. The Bismarck Hotel in Chicago, by Rapp & Rapp, has effective modernistic interiors; the Barbizon, in New York, a hotel for women, by Murgatroyd & Ogden, has a mass building up beautifully to a central tower, with detail of modified Italian Gothic character; the Biltmore at Santa Barbara, by Reginald Johnson (awarded a medal at the New York Architectural League Exhibition) is low, rambling, exquisitely proportioned, with Spanish baroque detail. The New York Athletic Club's new building, by York & Sawyer, solves a problem somewhat similar to that of a hotel, in a massive, Italian Renaissance structure, whose great virtue is the simple bigness of its detail and the frank expression of its function, by means of loggias and windows of varying sizes. Entirely different in character and an almost perfect country hotel, the Lord Jeffery Inn at Amherst, Mass., by Putnam & Cox, has an unobtrusive, late colonial informality that carries on beautifully the tradition of the college town in which it stands. The Masonic Temple at Dayton, Ohio, by Herman & Brown, is a dignified example of the purely classic type. Particularly

effective is the great pedimented colonnade of the entrance motive. Unqualified doctrinaire modernism characterizes an apartment house in Los Angeles, by Richard J. Neutra. In this, perhaps for the first time in America, the horizontal bands of windows, so common in German work, are boldly used; the whole obviously owes much to the inspiration of the work of Eric Mendelsohn.

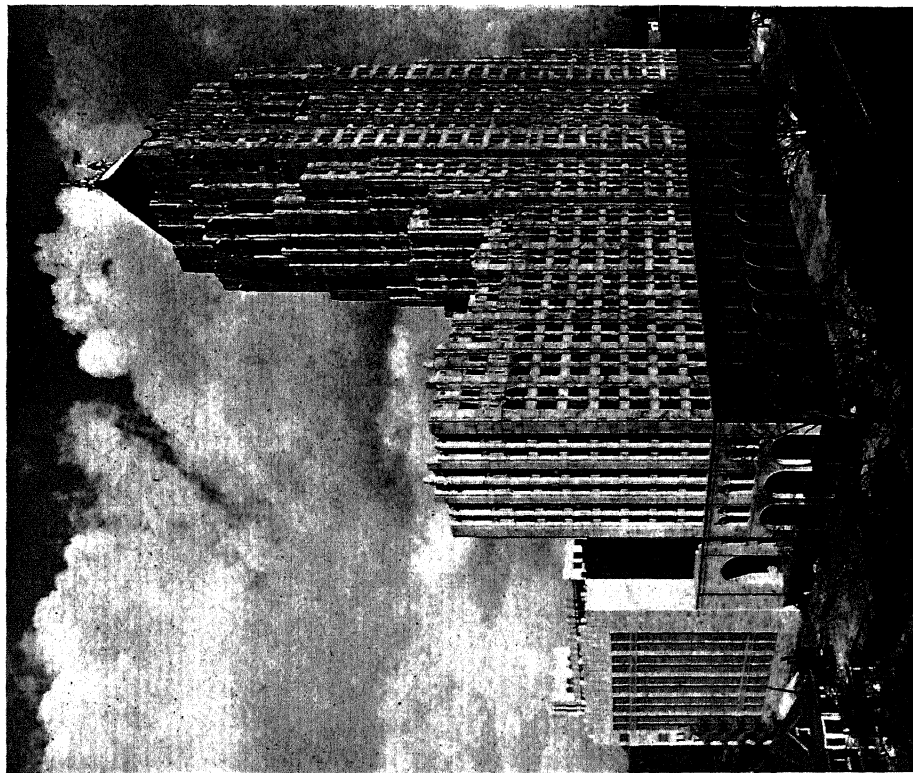
By far the most important public building of the year in the United States is the City Hall of Los Angeles by Austin, Parkinson & Martin. This solves satisfactorily the difficult problem of combining the enormous amount of administrative office space with a dignified council chamber and suite of executive offices. In general scheme this building consists of a large, lower portion, rectangular in plan, with a high, central tower for the municipal offices. The detail is freely classic, with touches of Romanesque feeling, and the whole has a dignity and monumentality befitting its purpose. The large municipal auditorium of San Antonio, Texas, by Ayres, Ayres, Willis & Jackson has a particularly interesting entrance motive with an arched loggia flanked by towers, the whole treated in a simple and direct Spanish baroque style.

In the New Britain, Conn. war memorial, H. Van Buren Magonigle has succeeded by rigid restraint in producing a powerful emotional effect with the simplest of means. The memorial consists of a heavy polygonal shaft on a circular plaza. The shaft is capped with a great modernistic eagle, and the plaza entrances flanked by large, simple urns, in which are concealed flood-lighting devices for lighting the whole at night. The year also saw the completion of the memorial to the late President Warren G. Harding at Marion, Ohio, by Henry Hornbostel & Eric Fisher Wood, which consists of a large circle of unfuted doric columns, Greek in inspiration.

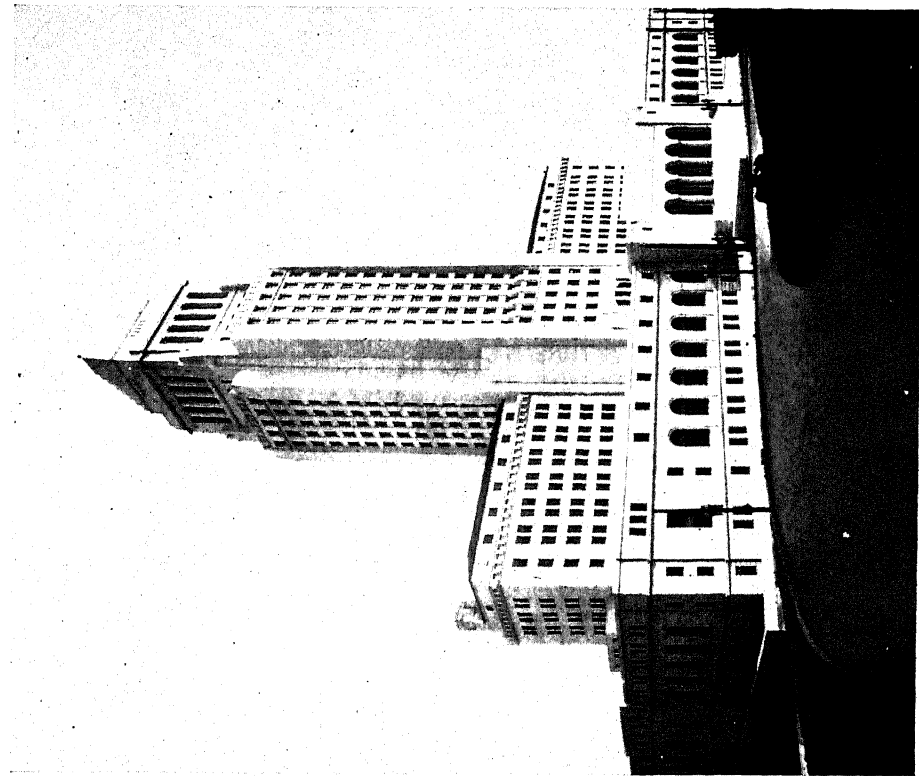
Among the school and college work, the Bixby Hall of Fine Arts, Washington University, St. Louis, by Jamieson & Spear, is noteworthy for its reduction of basically classic ideas to their simplest terms. The result is straightforward and beautifully proportioned, and the restraint pleasing, though austere. It is, however, a distinct departure in style from the earlier buildings, which are all in Early English Renaissance; its harmony with them is only a similar approach to the style problem and a similar restraint in detail. The Science Building for the College of New Rochelle, N. Y., by McGill & Hamlin, is in a much modified collegiate Gothic, with the large laboratory windows framed in deep buttresses and a dominant arched entrance. The Senior High School at Reading, Penn., by Ritcher & Eiler, is interesting in its contrast of long, low mass with a central entrance tower.

The most unique educational group of the year is the Cranbrook School at Cranbrook, Mich., by Eliel Saarinen. This, a lavish boarding school group, has been handled with masterful freedom. In no sense a piece of mere eccentricity, it makes the most of simple roof and wall surfaces, careful fenestration, and expressive use of materials and occasional bits of original and delightful carving.

The Concordia Lutheran Seminary, at St. Louis, by Day & Klauder, continues the high quality of educational work for which this firm is famous. It is in a free and beautiful Gothic,



FISHER BUILDING
DETROIT, MICHIGAN
Albert Kahn, Inc., Architects and Engineers



THE CITY HALL
LOS ANGELES, CALIFORNIA
Austin Parkinson & Martin, Associated Architects

AMERICAN ARCHITECTURE OF 1928

with details of great variety and interest. The simple, upward sweep of the tower is particularly fine.

The new work by Cram & Ferguson, on the Cathedral of St. John the Divine, New York, continued swiftly. Not only did the nave approach completion, with the building of the vault and the roof, but the west front was carried up to the top of the porches and the north transept begun. The baptistry was also finally completed and forms an exceedingly interesting interior, with its frieze of polychromed, heraldic ornament and the rich, interlacing ribs of the vault. Among other ecclesiastical work of the year, the Roman Catholic Church of St. John the Evangelist in Brooklyn, by McGill & Hamlin, is distinguished in the simplicity of its brick exterior and rough plaster interior and the sense of height and size given by its slim, pointed arches. Outside, the long, brick side toward the street is received at one end against an arched entrance porch with a low tower and capped at the other by a tall, copper flèche.

The year 1928 was also marked by the completion of the Princeton University chapel, by Cram & Ferguson. This magnificent, large, vaulted church is perhaps the most scholarly and carefully studied modern Gothic building in America. Simple in plan, it is exceedingly effective in the long march of its nave arcade, and its attempt to combine the height and logical directness of the French Gothic with the delicate charm of detail of English Gothic is unusually successful, but, as in the case of almost all such attempts, the interior is more satisfactory than the exterior. An interesting freshness of detail is given by the introduction of Renaissance motives in much of the church furniture.

An enormous amount of domestic work of exceedingly high character constructed during 1928 makes the choice of individual examples difficult. Particularly noteworthy, however, is much work in the neighborhood of Philadelphia by Mellor & Meigs and Robert R. McGoodwin; in New York suburbs, by Peabody, Wilson & Brown and J. C. McKenzie, Jr.; and in southern California by Donald D. McMurray and Reginald Johnson. Frank Lloyd Wright carried to a high degree of perfection his experiments in the use of concrete for houses and in a number of examples near Los Angeles has produced designs not only unique in construction and detail, but beautiful in effect, as well. The general system of construction consists of square, precast concrete units, framed in a mesh of steel reinforcement, and by patterning the units, great richness of effect is economically obtainable. Should this method of construction be equally available for more severe climates, these houses may well prove as epoch-making as they are imaginative.

The opening of the Columbia-Presbyterian Medical Centre, by James G. Roger, and the Psychiatric Institute, by Sullivan Jones (then N. Y. State Architect), a part of the same group, marked the completion of the first great group of combined hospital and medical school buildings designed on sky-scraper lines, in accordance with urban conditions, and because of the congestion of available city land. The group is marked by a distinct cliff-like and deeply shadowed impressiveness; the bold projections of the ward wings and the grouping of the buildings on the hillside unite to produce an effect of height and

strength. Nevertheless, the power of the whole is rather bleak and heartless; the elaboration of carefully planned, mechanical equipment which alone makes such a group possible, is reflected on the outside in a certain mechanistic quality of effect. In detail, the whole is extremely simple, rather inclined toward modernism, but with a slight Gothic flavor. In plan, the group reveals intensive study and many innovations of arrangement, so that the whole is bound to exercise tremendous effect on all hospital building of the future.

GREAT BRITAIN. Commercial and industrial uncertainty was reflected during the year in the lessening of the quantity of building. In London, the Westminster Bank, by W. Curtis Green, has the usual rather complicated classic formality so commonly seen in London architecture. The new building of the Sun Life Assurance Co., of Canada, by Septimus Warwick, is classic, also, but much simpler and more direct. The new Grosvenor House, by Sir Edwin Lutyens, in association with Wimperis, Simpson & Guthrie, is a huge square mass, dignified but undistinguished. The new Empire Theatre is an enormous moving-picture house, seating over 3000 on the floor and one balcony. The whole is designed along American lines, by F. Matcham & Co. in association with the American architect, Thomas W. Lamb. The Arcadia Works, a tobacco factory, by M. E. and O. H. Collins, form an imposing block in a fantastic, modernized Egyptian manner. If the applicability of such an exotic style for a tobacco factory be admitted, the cleverness of this adaptation cannot be denied, and whatever the theoretical attitude may be, the whole forms an amusing and imaginative street front.

Outside of London, the Torbay Hospital at Torquay, by Adams, Holden & Pearson, is noteworthy for the handsome and severe simplicity of its rather conventional brick treatment. It is an excellent example of that type of modern Georgian in which the English are almost universally successful. At Levershulme, near Manchester, a dance hall by Harold Davies reveals the strength of American influence in England today—an influence which an English critic of this building likens to "American faking." The exterior is strongly inspired by the modernized, Spanish colonial of California and the interior resembles an arcaded courtyard with a vault over the central portion. The interior is rather gay, as befits its purpose, but without tawdriness.

The remarkable originality of modern English ecclesiastical architecture is well illustrated in two churches, that of St. Alphage at Hendon, by Nicholas Dixon-Spain, and the Roman Catholic Church of St. Michael at Ashford, by Sir G. G. Scott. Both have simple and rather square exteriors and interiors distinguished by simple directness and lack of ornament, the beauty of effect being gained by the careful handling of the proportions of the structural members.

INDIA AND AUSTRALIA. Work on the great capitol group at Delhi, by Sir Edwin Lutyens and Sir Herbert Baker, was being pressed forward rapidly and the exterior of the legislative building was almost complete. The whole group is interesting in its combination of English classic and Indian forms. Particularly distinguished are the two spreading buildings known as the secretariat buildings by Baker, which flank the central avenue. In Australia the year saw the opening of the first of the provincial capitol buildings

at the new capital, Canberra, from the designs of Walter Griffen. This first building is, like all of those designed for the enormous ultimate scheme, uncompromisingly modernistic and rectangular.

FRANCE. The most important addition to Paris buildings was the great new concert hall known as the Salle Pleyel, by Auburtin, Grasset & J. B. Mathon. This consists, not only of an enormous concert hall seating over 3000 people, but also two smaller recital halls and the rooms of the Pleyel Society, combined in a plan of customary French brilliance. The façade is severe and rectangular, but the variation of rectangular and octagonal windows gives a note of interest. The interior of the great hall is entirely in sweeping curves, laid out according to the most recent acoustical knowledge. The result is a rather egg-shaped form, exceedingly difficult to treat, and lacking in scale. There is an interesting frieze around the bottom by the decorator, Jaulmes.

In ecclesiastical architecture the most interesting two designs were those of St. Pierre, at Chaillot, by Émile Bois and Notre Dame de Loc-Maria, at Quimper, by Charles Chaussepied. The first of these is an ambitious scheme of a great rectangular base carrying five domes and entered by a triple portal in a triangular-topped, pediment-like frame; at one side there is a slim tower, whose chief feature is a colossal crucifix in the centre of the front. The treatment of the whole is entirely modern, yet strongly influenced by the Romanesque of central France. The other is a much smaller, country church of brick with a low, central tower; it has much of that direct, informal charm so characteristic of the traditional French rural churches.

The country club, La Festa, at Monte Carlo, by C. Letrosne, has a beautiful casino plant with a magnificent, terraced, tennis-court lay-out, the whole designed with an exquisite sense of the site and the view as well as a charming sense of the materials used. The detail is rather classic in feeling but much modernized and the effect of the whole, rich, without being in the slightest degree ostentatious. Somewhat similar in feeling was the casino at Évian, by J. Hébrard. The large central hall shows a rather playful version of neo-Byzantine style; interlacing arches and penetrating vaults carry a large dome, whose base is pierced by a ring of windows. Despite unnecessary complexities in the vaulting arrangement, the general interior effect is quite delightful.

A large new bridge at Plougastel, by Limousin & Freyssinet, is a remarkable example of the light gracefulness of structural form possible in reinforced concrete. It consists of three spans of almost 600 ft. each, and each span is made of one great arch, beautiful in curve and of much delicacy. The crown of the arch is about 125 ft. above the water. This bridge is important, not only because of its inherent beauty, but also because, like the dirigible hangars at Orly, by the same designer, it is a great step forward in the development of the artistic possibilities of a comparatively new material.

GERMANY. The tremendous industrial activity of present-day Germany was reflected in the large amount of building of all types. It is almost without exception modernistic in feeling, although in the more recent work a tendency was observable toward the less extreme types and a growing simplicity with touches of distinct neo-baroque influence.

This tendency was clearly visible in the new Finance Ministry Building at Breslau, by Allesscher—a large, dignified mass, with the traditional German high roof and a garden court behind. In style this is distinctly neo-baroque with the modernistic tendency appearing only in occasional details. In Frankfurt-on-the-Main, a municipal market, by H. Kramer, with an eight-story office building at one end and a refrigerating storehouse balancing it at the other, has a somewhat similar, simple charm; the market hall, itself, has an interesting glass and concrete vaulted roof. Perhaps the most unusual of the German public buildings is the Cologne exposition group, by A. Abel. The main building consists of an old barracks altered into a museum by the most brilliantly simple means, with long lines of vertical piers and a high tower. The interiors are particularly interesting in their simple use of straight lines. Beside the exhibition building proper, there is a lovely terraced layout overlooking the Rhine and an attractive restaurant. A planetarium at Nuremberg, by Schweizer, is starkly simple, but decorates its sweeping wall with interesting diagonal brickwork patterns.

Of the many commercial buildings of 1928, the Hindenburg Building in Stuttgart was interesting in its combination of a planetarium with several restaurant and café rooms, and because it is a step further in completing, in a harmonious manner, the square opposite the railway station finished last year. Its outside is severely simple, but some of the restaurant interiors unusual and interesting. It is by Eitel, Schmoll & Staehlin. Also in Stuttgart there is an unusual store building by Eric Mendelsohn with his characteristic contrasts of long banks of horizontal windows and sharply accented vertical motives. Somewhat similar are two buildings in Berlin by the Luckhardt Bros. & Alfors Anker, in both of which a curved corner is emphasized by a sweeping band of ranked windows.

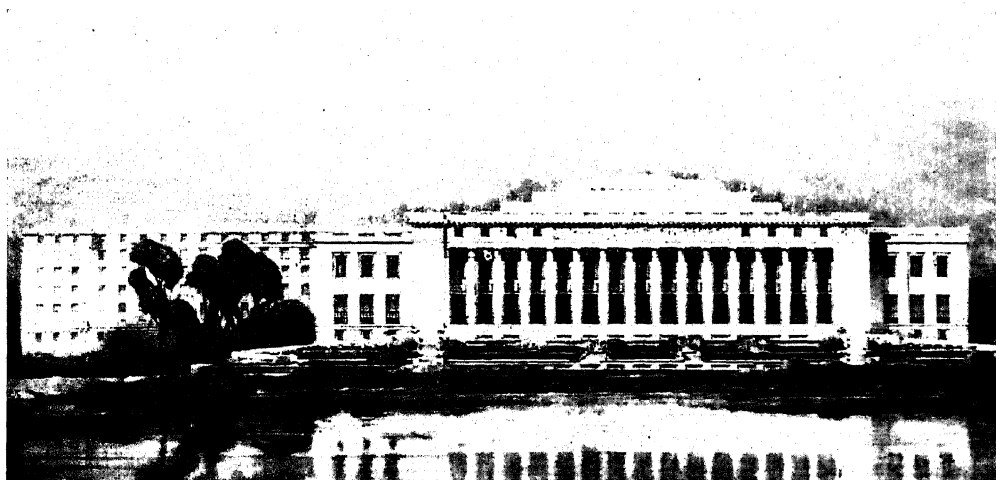
Ecclesiastical architecture shows, universally, the attempt to create new forms, varying from the somewhat conservative neo-baroque of the picturesque group of the Sacred Heart at Wurzburg, by A. Boslet, a charming, rambling mass of buildings containing a seminary and a church, to the extremely manneristic modernism of the church at Limburg, by J. Pinand, with its hyperbolic vault and fantastic, many-windowed apse. The Heilandskirche at Hamburg-Uhlenhorst, by E. Heynen, is distinguished in its simplicity and the development for form from the direct use of its materials.

Many moving-picture theatres show the tremendous development of motion-picture popularity. They are all, without exception, modernistic, and usually of extreme simplicity in form, depending upon color for richness. The Bieberbau at Frankfurt, by E. J. Margold, and a new theatre in Hamburg, by Karl Winand, are characteristic examples. Karl Winand also produced, in the Fledermaus dance hall at Hamburg, an unusually attractive and playful combination of modernistic forms and colors, for a building of this kind.

Of a great deal of published domestic work, that of Margold in Frankfurt and Rosenthal in Berlin was particularly interesting in its imaginative use of so-called modernistic forms. The Berlin apartment houses, by Rudolf Fraenkel, are quiet, simple, direct; and in Leipzig, Bruno Taut did much work particularly distinguished



THE "MESSEHOF" (RESTAURANT) ON THE EXPOSITION GROUNDS
THE INTERNATIONAL PRESS EXPOSITION, COLOGNE



PRIZE DESIGN FOR LEAGUE OF NATIONS BUILDING AT GENEVA
EUROPEAN ARCHITECTURE OF 1928

by its bold use of color. The most interesting of the large housing developments was the Berlin suburb Zehlendorf, with houses by Klein, Emmerich, Gerlach, Steinmetz, Tessenow, Mebes, Poelzig, and others. Laid out with the customary German care, this development has houses which for the most part are rather blocky, rectangular, and simple. The general effect has the clarity and neat picturesqueness one has come to expect in such developments.

A country school near Dresden, by H. Tessenow, had an attractive open court in the centre and slim arcades around. The whole has real charm. The Gesamtschule at Neukoeln, near Berlin, by Bruno Taut, is chiefly remarkable for the clever way in which its triangular site has been utilized for athletic fields, etc.

OTHER COUNTRIES. Little important work was done in Austria. There, as in Germany, modernism was predominant. In general, the tendency was toward a more rectangular type than that of Germany; the influence of the neo-classicism of Otto Wagner still remained. Typical are the hotels, the Babelhof, by Karl Ehn, and the *Eberthof*, by Mittag & Hauschka, as well as a block of stores and apartments by Oscar Wlack. All of the above are in Vienna.

In Italy, Mussolini's plans for the modernization of Rome had so far produced little new completed building, but they served to lay bare large areas of the ancient Roman city, hitherto hidden, and resulted in the discovery of much Roman work of great importance. Of new buildings, particularly important were the hospital of Sant' Erasmo at Legnano, by C. Bianchi—a long, low, brick building with an interesting entrance loggia of arches in alternating courses of brick and stone, and the church delle Figlie di Ste. Anna, at Rome by A. Pepi, a lavish piece of baroque architecture, with massive marble columns on the interior and an apsidal chancel.

In Czechoslovakia, an important new group of capital buildings was completed at Prague by A. Engel. The main building is of the type so common for parliament buildings, with two wings and a dome; there are also numerous other administrative buildings, a so-called "forum academicum" and a victory monument, taking the form of a column of great height carrying a colossal figure of victory.

In China, the new Nationalist Government revealed an unusual sense of civic responsibility as well as a keen appreciation of the needs of a modern city, in its ambitious ideals for its capital city, Nanking. In this it was their intention, not only to lay out a city plan in accordance with the most modern ideas, but also to develop a great series of government buildings in a modern adaptation of the traditional Chinese style. As a first step they appointed an American architect, H. K. Murphy, as their architectural adviser.

The deadlock which resulted from the competition for the League of Nations building at Geneva, referred to in the architectural article in the 1927 YEAR BOOK, was at last broken, and after an intensive study of the prize-winning designs, the committee in charge has finally appointed as the architects the Paris firm of Nénot & Flegenhimer, with the idea that they should re-study their competition plan, bearing in mind various details from the designs of Lefèvre, Droggi, and Vago. The design thus honored was one of the least radical in the competition; it

is in a straightforward, classic style of great dignity, with a plan beautifully studied, in the French manner, and a magnificent colonnade as the chief feature. The office buildings do not compare in beauty with the central buildings, and it is to be hoped that with re-study they will achieve a more interesting form. There will undoubtedly be much criticism of the choice of such a conservative design, but the effect is bound to be dignified and the plan is monumental and efficient. See also BRIDGES.

ARCTIC EXPLORATION. See POLAR RESEARCH.

ARGENTINA, är'jën-të'nä. A South American republic on the eastern coast of the southern part of the continent, consisting of 14 provinces, 10 territories, and the federal district. Capital, Buenos Aires.

AREA AND POPULATION. The total area of Argentina is 1,153,119 square miles. An official estimate of the population of the republic as of Jan. 1, 1927, based on census of 1914, and the birth, death, and migration records since that time, showed a total population of 10,348,189. According to the census of 1914 (the latest official count), Argentina had 7,885,237 inhabitants. The number of immigrants of 1926 was placed at 113,352 and the number of emigrants at 159,448. Normally immigration and emigration balance due to the influx and exodus of large numbers of Italian and Spanish laborers before and after the harvests.

An interesting study of "Seventy Years of Argentine Immigration," by Professor Alejandro E. Bunge, appeared in the Pan American Union *Bulletin* for October, 1928. This article chiefly stressed the Latin characteristics of the immigrants and emigrants. The 5,740,000 immigrants who entered Argentina from 1857 to 1926, were in the majority, Latins—inhabitants of the States of southern Europe. The Italians and Spaniards alone constitute 79.6 per cent of the total, while the immigrants from all the non-Latin countries form scarcely 15 per cent. Professor Bunge attributes the fact that Nordic immigrants have shunned the shores of Argentina to the similarity of race, language, and customs to be found in the United States and Canada rather than to climatic conditions in Argentina. The Italian immigration was formerly the most numerous. Up until 1870, 70 per cent of all the immigrants were Italians; later this proportion was reduced to 60 per cent, and to-day it remains stationary at about 45 per cent. But the emigration of Italians from Argentina has always been active, amounting to 50 per cent of all the people leaving the country. The Italians seemed to leave the country in great numbers at times of national crises. Spanish immigration as contrasted with Italian shows a steady increase year by year. At first it formed only 15 per cent, just before the World War it rose to 49 per cent, and in the post-war period it has remained at about 25 per cent.

Increases in the non-Latin immigration (Polish, Russian, German, Yugoslav, Czechoslovak, and Lithuanian) in recent years have occasioned an important change in the nature of immigration into the country, and if the proportion continues in the future must produce radical changes in the ethnic composition of Argentina's population. As noted above non-Latin immigration amounted to only 13 per cent of the total. Since the War this proportion has increased

rapidly. It was 19.6 per cent in 1922, 25.2 per cent in 1923, and 30 per cent in 1926.

The population of the larger cities was as follows: Buenos Aires, June, 1914, 1,575,813, and according to the census of June 1, 1925, 2,310,441; Rosario (Santa Fé), 1914, 222,592 (estimated 1927, 410,000); Córdoba, 1914, 134,935 (estimated, 1927, 200,000); La Plata, 1914, 90,436 (estimated, 1927, 169,000); Tucumán, 1914, 91,216; Santa Fé, 1914, 59,974; Mendoza, 1914, 58,790; Avellanda, 1914, 46,277; and Bahía Blanca, 1914, 44,113.

EDUCATION. Under the Ministry of Justice and the cabinet of the Chief Executive of the nation, the school system of the Argentine Republic is centralized. Although certain liberties tending toward autonomy are delegated, as in the case of the university, the popular mind looks to the Federal Government as the source of all good and evil in matters of education, and, strange to say, even in cases of most extreme bitterness and complaint, the demand is for a change of personnel rather than for a reform in system. Elementary instruction is free, secular, and compulsory for children from 6 to 14 years of age. According to statistics, published in 1928, for primary instruction there were 10,608 public schools in charge of 45,271 teachers, with an enrollment of 1,302,534 pupils and an average attendance of 1,031,890. There were 44 national secondary schools, with an enrollment of 15,111 pupils, and 84 normal schools with an enrollment of 13,997. The five national universities, The University of Buenos Aires, La Plata, Córdoba, the Litoral, and Tucumán, had a total enrollment of 15,843 students.

PRODUCTION. The country is agricultural, its principal resources being cereals and animal products. It is self-sufficient in the matter of food stuffs, its prosperity depending upon the surplus production and foreign marketing of these articles. Industrial development, therefore, has followed along the lines of preparation of food-stuffs, and except for meat packing, flour milling, the dairy industries, sugar refining, and other industries concerned with the first stages of the working of raw materials, the manufactures are unimportant and insufficient for domestic needs. The production of manufactured goods was greatly stimulated by the World War, however, the greatest progress having been made in the dairy, tanning, footwear, wool scouring and carding, woolen textile, forest products, wine, and meat industries, and to a lesser degree in the manufacture of cotton piece goods, glass and china ware, tools and light machinery, sacking and cement. A more recent incentive to national industry is found in Argentina's tariff policy, the avowed purpose of which is the protection of home industries using domestic raw materials. At present the chief obstacle to such industries is the lack of domestic fuel. Most of the coal used in Argentina comes from Great Britain and the petroleum supplies from the United States and Mexico. The industries of Argentina are centred in the Province of Buenos Aires, where capital invested in industrial and commercial establishments exceeds \$1,000,000,000.

The total area of Argentina is about 700,000,000 acres, of which about 250,000,000 acres may be used for agriculture, the same for cattle grazing, and approximately 100,000,000 acres represent woodland. About 10,000,000 acres require irrigation. The acreage under wheat in 1927-28

was 19,168,800 acres and the production 6,500,000 metric tons; oats, 2,829,600 acres, 759,000 tons; linseed, 7,051,850 acres, 2,063,000 tons; maize (1926-27), 10,293,600 acres, 8,150,000 tons. The area under sugar is about 237,500 acres and the production in 1927 amounted to 474,256 tons; under the vine 280,000 acres, which produced 90,640,000 gallons of wine. Cotton was planted on 71,746 acres, which produced 42,000 tons. The 1927-28 wool production was estimated at 146,098 metric tons.

In a message of the President to Congress in July, 1928, he stated that agriculture had made still further advances over the preceding year. The area planted to wheat, linseed, oats, barley, birdseed, and corn increased in 1927-28, to 17,338,000 hectares, an area 623,600 hectares larger than the plantings in the preceding year and 4,372,645 hectares greater than that of 1922. Exports of wheat, linseed, oats, barley, rye, and corn, which were 9,373,046 tons in 1926, rose to 15,501,694 tons in 1927. Marked progress was also reported in the number of farms worked by their proprietors, the improvement of processes of cultivation, and the development of coöperative societies, stock raising, and dairying.

Meat refrigeration is the principal industry. In 1926, 430,728 tons of chilled beef, 226,739 tons of frozen beef, and 67,229 tons of frozen mutton were exported. The number of cattle killed and refrigerated was 3,050,970 head. Flour milling ranks second to refrigeration, the average annual output being 7,000,000 sacks. Mining is of no great importance, although gold, silver, copper, and tungsten are worked to some extent. The 1927 production of crude petroleum amounted to 5,106,900 barrels, as compared with 3,773,585 barrels in 1925. Argentina ranks tenth among the oil-producing countries.

COMMERCE. On Jan. 23, 1928, the Director General of the National Bureau of Statistics furnished the following figures in his report on the foreign trade of Argentina to the Ministry of the Treasury: The cash value of the foreign trade of Argentina for 1927, excluding shipments of coin, amounted in round numbers to 1,864,790,000 gold pesos as against 1,614,675,000 gold pesos in 1926, showing an increase of 250,115,000 gold pesos, or 15.5 per cent, for 1927. Imports in 1927 amounted to 856,610,000 gold pesos, against 822,496,000 gold pesos in 1926, or an increase of 34,114,000 gold pesos, 4.1 per cent. Imports of coin amounted in 1927 to 86,550,000 gold pesos as against 2,035,000 in the previous year. Exports in 1927 amounted to 1,008,179,000 gold pesos as against 792,179,000 in 1926, showing an increase of 216,000,000 gold pesos, or 27.3 per cent. There were no exports of coin in 1927. The visible balance of trade in 1927 was favorable, amounting to 151,568,566 gold pesos, whereas in 1926 there was an unfavorable balance of 30,317,975 gold pesos.

FINANCE. The message of the President read to Congress during the summer stated that general revenues and expenditures during the fiscal year 1927 totaled 655,558,583 and 651,934,237 paper pesos, respectively—resulting in a surplus of 3,624,346 pesos. If the revenues to be collected on account of the sanitary works of the nation, and those from various Provinces for service on their debts, be considered, the surplus, according to the President, approximated 7,400,000 paper pesos. The President also stated that the executive power had refrained as much

as possible from making expenditures not authorized by Congress, limiting those by ministerial resolutions (*acuerdos de ministros*) to cases of "inescapable necessity." The amount expended by *acuerdos* totaled 16,705,171 paper pesos, and those by special laws of Congress, 18,280,853. It was further stated that the sum expended without authorization of Congress would have been kept at an insignificant amount as in 1923, if the Congress had sanctioned a budget providing for the expenditures that the increase of the administrative services demanded.

As a result of consolidation loans effected during the year, the unconsolidated debt was reduced to a total outstanding of 408,440,376 paper pesos on Dec. 31, 1927. In addition to this amount, the Government also recognizes a debt of approximately 40,000,000 paper pesos resulting from differences in exchange in connection with the cancellation of the loan obtained from the British Government in 1920. The payment of this amount was requested in a message to Congress of Aug. 31, 1923. The internal consolidated debt totaled 1,051,697,962 paper pesos on Dec. 31, 1927. During the year external flotations totaled 253,205,636 paper pesos and amortizations 37,809,250 pesos; so that the total consolidated debt at the end of 1927 amounted to 1,103,820,137 paper pesos. The total consolidated debt on Dec. 31, 1927, reached 2,155,518,099 paper pesos as compared with 1,845,847,778 at the end of 1926.

In 1928 the 1929 budget was passed as follows:

<i>Expenditures</i>	<i>Paper pesos</i>
Congress	6,383,511
Ministry of Interior	110,573,240
Ministry of Foreign Affairs	6,651,034
Ministry of Finance	27,602,138
Ministry of Justice and Public Instruction	147,797,756
Ministry of War	67,587,321
Ministry of Marine	46,816,045
Ministry of Agriculture	22,198,236
Ministry of Public Works	23,640,165
Pensions and allowances	28,220,992
Service of the public debt	216,661,016
Total	704,131,454

COMMUNICATIONS. The length of railways open on Jan. 1, 1928, was 22,791 miles, of which 4418 miles belonged to the State and 18,373 miles belonged to private companies. The total receipts in 1927 of both the State and privately owned lines were 146,840,800 gold pesos as against 137,942,400 gold pesos in 1926. Passenger traffic in 1926 was 145,000,000; freight traffic, 45,500,000 tons. The capital invested in 1925 amounted to 1,276,843,316 gold pesos.

GOVERNMENT. The executive power is vested in a president elected for six years, and the legislative power in a national congress, comprising a senate of 30 members elected for nine years, and a chamber of deputies of 158 members elected for four years by the people at the ratio of one deputy for every 49,000 inhabitants (census of 1914). One-third of the senate retires every three years and one-half of the chamber every two years. The cabinet is appointed by and under the direction of the President, and comprises the departments of foreign affairs, finance, interior, justice, and public instruction, war, agriculture, marine, and public works. President in 1928, Dr. Marcelo T. de Alvear (assumed office Oct. 12, 1922); vice president, Dr. Elpidio González. For the change in the presidency in 1928, see below under *History*.

HISTORY. Argentina went through all the throes

of a presidential election in the course of 1928. The successful candidate, Dr. Hipólito Irigoyen, was inaugurated on October 12, for the period 1928-34. He had been elected on April 1. Dr. Irigoyen was born in Buenos Aires in 1852 and educated at the college of San José, which later became the University of Buenos Aires. Evincing a keen interest in politics very early in life, it was not surprising to find him a member of the National Congress as early as 1880. For a number of years he devoted his time to teaching and managing his huge estate. During the political upheaval of 1890, Dr. Irigoyen, who was a distinct radical in politics, occupied an important position under the provisional government. He later refused to participate in the various governments of his country, but during the administration of Dr. Roque Saenz Peña (1910-14), he reached an agreement with Dr. Peña whereby the demands of the Radical party were met for the first time, and the electoral law was changed to provide for free, universal, and obligatory suffrage, including the secret ballot. The beneficent effects of the new law were immediately in evidence, a number of radicals were elected in 1912, and four years later the party as a whole was triumphant, Dr. Irigoyen being elected—in spite of repeated refusals to be a candidate—and assuming office Oct. 12, 1916. According to the Pan American Union *Bulletin*, "Among the outstanding achievements of his first administration were the unswerving neutrality of Argentina—in spite of enormous pressure from within and without—in the World War; the introduction of the minimum wage to save the working class from a devalorized currency and his determination that the purchasing power of the masses should not be reduced; the raising of the railway tariffs; and, above all, his policy of intervention in the upholding of national and provincial constitutions."

Of interest to the United States was the resignation of Dr. Honorio Pueyrredón from the post of Ambassador to the United States, an appointment he had held since 1924. He was considered in some quarters as openly hostile to the Washington conception of Pan-Americanism and played a leading rôle at the conference at Havana. See PAN AMERICAN UNION. Dr. Pueyrredón was succeeded by Dr. Manuel Malbrán who presented his credentials on September 17. Dr. Malbrán had been connected with the diplomatic service of the Argentine republic since 1909, serving, among other posts, as Minister to Colombia, Venezuela, Mexico, and Chile. Dr. Malbrán's task was not an easy one. The relations between the United States, as noted in the preceding YEAR BOOK, were anything but friendly. The immediate cause of the coolness was the tariff wall which the Fordney-McCumber tariff placed on Argentine products and the indifference which the American State Department and the Tariff Commission showed toward Argentine protests. A remote cause of the aloofness was undoubtedly the attitude which the South American Republic takes toward the Monroe Doctrine. It had stoutly maintained that this doctrine was a unilateral statement of an American president and in no way binds any other nation. Argentina sturdily maintained the complete and untrammelled sovereignty of all South American republics and refused to believe that her international actions were in any way impeded by the existence of the Monroe Doctrine. She held unswervingly to this course

at the Havana conference of Pan-American States in January-February, 1928, and stirred up a wave of anti-American feeling which the American representative, Charles Evans Hughes, was scarcely able to abate.

ARGOT. See PHILLOLOGY, MODERN.

ARIZONA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 334,162. The estimated population on July 1, 1928, was 474,000. The capital is Phoenix.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Hay	1928	195,000	702,000 ^a	\$12,614,000
	1927	202,000	682,000 ^a	9,797,000
Wheat	1928	47,000	1,269,000	1,650,000
	1927	58,000	1,450,000	1,958,000
Barley	1928	17,000	646,000	517,000
	1927	20,000	700,000	525,000
Grain sorghums	1928	52,000	1,508,000	1,206,000
	1927	50,000	1,550,000	1,162,000
Cotton	1928	202,000	134,000 ^b	15,745,000
	1927	140,000	91,000 ^b	11,648,000
Corn	1928	89,000	1,014,000	1,268,000
	1927	44,000	1,408,000	1,619,000

^a tons, ^b bales.

MINERAL PRODUCTION. The total value of minerals produced in the State rose, for 1926, to \$115,047,987, from \$114,202,670 for 1925, and the State stood in 1926 thirteenth in rank as a mineral producer. As in preceding years, it derived its high total value of mineral production preponderatingly from the mining of copper, gold, silver, and lead. In the year 1927 production was somewhat reduced, principally in copper, in which during a great part of the year prices were depressed. Arizona's copper output in 1927 was 681,168,817 pounds; in 1926, 729,324,537. Gold production fell to 203,088 troy ounces in 1927, from 232,200 in 1926; in value, \$4,198,200 for 1927 and for 1926, \$4,800,000. Silver produced totaled 6,601,467 troy ounces in 1927 as against 7,506,708 in 1926; the decline in the respective silver totals by value, to \$3,743,032 for 1927, from \$4,690,236 for 1926, was pronounced. Lead production fell to 19,825,000 pounds (estimated) in 1927 from 23,258,274 in 1926; its value for 1927 was about \$1,342,200. Zinc production in 1927 was 1,984,000 pounds; in value, \$124,600. Arizona continued in 1927 to produce more than twice as much copper as any other single State. On a minor but increasing scale it produced lime, and chief among its other lesser products were stone and clay products.

For 1928 the total value of gold, silver, copper, lead, and zinc mined in the State was \$116,462,000. The increase in production value, over the total for 1927, was mainly in copper, and to a slight extent in silver, while decreases occurred in gold, lead, and zinc. Gold production in 1928 attained the total value of about \$3,930,000; silver output was about 6,943,000 ounces, in value, \$4,062,000; copper output, about 736,282,000 pounds, in value \$107,497,000; lead production, about 14,767,000 pounds, with a value of \$910,000; zinc recoveries were about 1,200,000 pounds, chiefly from Santa Cruz County, in value \$72,000.

FINANCE. State expenditure in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, was: for maintenance and operation of government departments, \$5,931,979 (of which \$1,792,310 was for local education); or interest on debt, \$88,237; for permanent improvements, \$1,523,613; total, \$7,543,829 (of

which \$2,325,867 was for highways, \$1,040,819 being for maintenance and \$1,285,048 for construction). Revenue was \$7,710,146. Of this, property and special taxes formed 62.4 per cent; departmental earnings and charges for services of State officers, 4.6 per cent; sale of licenses and taxation of gasoline, 15.3. Property assessed valuation was \$656,252,610; State taxation thereon, \$4,459,913. Net funded State debt was \$433,267, which did not include a contingent debt represented by outstanding county and city debt contracted in the territorial period.

TRANSPORTATION. The total mileage of railroad line under operation on Jan. 1, 1928, was 2496.33. There were built in 1928, 39.64 additional miles of first track and 33.96 of second track.

EDUCATION. The State Board of Education adopted a requirement of three years' study beyond high school, in an accredited institution, as necessary to qualification for a teacher's certificate after July 1, 1930. The two State normal schools, at Tempe and Flagstaff, were placed on a four-year plan of instruction, instead of the two-year plan previously in operation.

CHARITIES AND CORRECTIONS. The central State authority in administrative welfare activities was in 1928 the Board of Directors of State Institutions, consisting of the Governor, the State Treasurer, and one appointed citizen member. This board reported the population of the State institutions at the end of 1928 as follows: Asylum for the Insane, 710; Industrial School, 115 (boys, 102; girls, 13); Pioneers' Home, 131 (including 12 women); State Prison, 549 (including 8 women). The board has charge also of a State free employment bureau. There were admitted to the State mental hospital in 1927, according to the U. S. Department of Commerce, 181 patients.

POLITICAL AND OTHER EVENTS. The State highway commission early in the year formulated plans for the building of some \$6,000,000 of highways, chiefly of oiled earth roads. This was opposed by delegates of the chief counties of the State, who demanded that the State lay hard-surfaced roads to link the concrete routes locally constructed. Construction work on the Coolidge Dam across the Gila River below San Carlos, under Federal auspices, advanced rapidly during the year, and at the year's end was nearly complete. The State attorney-general conducted an investigation into alleged price fixing in the sale of gasoline. With regard to the Boulder Dam project, the State Government maintained its opposition to the Johnson-Swing bill in Congress as depriving the State of the use of part of its natural resources. Governor Hunt in a communication to the Federal Trade Commission requested that it investigate the proceedings of lobbyists in favor of the bill.

Twenty giant land tortoises imported from the Galapagos Islands were placed in the care of the Boyce Thompson Arboretum near Superior, in order to ascertain whether this vanishing species could be acclimated in the arid parts of the State, and whether it would provide a resource of value. Cattlemen and the State University organized in the summer an effort to extirpate the burro weed, a poisonous plant, destructive to live stock, and said to be present in some eight million acres of the State territory. Conflict between sheep and cattle men over the use of grazing land in Mojave County led to suit for an injunction to restrain cattle men

from interfering with an association of sheep grazers. The State supreme court revised the boundary of Maricopa County so that it should include a desert strip of some 60 miles long and 6 miles broad, previously regarded as forming part of Pima County. The area in question included a great part of the Papago Indian reservation and certain mining properties. An unusual mining enterprise was undertaken between Flagstaff and Winslow, at the site regarded by geologists as the falling place of an ancient meteor. It was planned to sink a shaft to the bottom of the crater at a depth of 1000 feet with the purpose of extracting iron, nickel, platinum and iridium said to assay \$85 a ton.

ELECTION. Governor Hunt (Democrat) was defeated for reelection on November 6, by John C. Phillips, Republican candidate. Henry F. Ashurst, Democrat, was reelected to the United States Senate for the ensuing regular term. L. L. W. Douglas, Democrat, was reelected Representative-at-Large. Arizona gave a popular vote of 52,533 for Hoover and Curtis, on the National ticket; for Smith and Robinson, Democratic candidates, 38,537.

Beside the Governor, State officers elected in November, 1928, were: Secretary of State, J. C. Callaghan, (Democrat); Auditor, Ana Frohmiller (Democrat); Treasurer, C. R. Poice (Democrat); Attorney-General, K. B. Peterson (Democrat); Superintendent of Public Instruction, C. O. Case (Democrat).

OFFICERS. Governor, G. W. P. Hunt; Secretary of State, James H. Kerby; Treasurer, J. C. Callaghan; Auditor, Ana Frohmiller; Attorney-General, John W. Murphy; State Superintendent of Public Instruction, C. O. Case.

JUDICIARY. Supreme Court: Chief Justice, Henry D. Ross; Associate Justices Alfred C. Lockwood, A. G. McAllister.

ARIZONA, UNIVERSITY OF. A coeducational State institution of higher education at Tucson, Arizona; founded in 1885. The 1928 autumn enrollment totaled 1989, and the summer session of 1928 had a registration of over 300 students. The faculty in the autumn of 1928 numbered 172. The University receives Federal and State support. The endowment fund amounted to \$10,000 and the income for the year to \$1,127,333. The library contained approximately 70,000 volumes. President, Homer LeRoy Shantz, Ph.D., Sc.D.

ARKANSAS. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 1,752,204. The estimated population on July 1, 1928, was 1,944,000. The capital is Little Rock.

Crop	Year	Acreage	Prod. bu.	Value
Corn	1928	2,002,000	33,033,000	\$30,080,000
	1927	1,925,000	36,575,000	31,820,000
Cotton	1928	3,610,000	1,215,000 ^a	110,565,000
	1927	3,048,000	1,000,000 ^a	101,000,000
Rice	1928	164,000	7,708,000	6,829,000
	1927	175,000	7,700,000	6,930,000
Hay	1928	756,000	794,000 ^b	10,934,000
	1927	789,000	876,000 ^b	11,709,000
Oats	1928	155,000	3,410,000	2,012,000
	1927	207,000	4,140,000	2,401,000
Potatoes	1928	36,000	2,700,000	2,160,000
	1927	29,000	1,972,000	2,958,000
Sweet potatoes	1928	28,000	2,520,000	2,268,000
	1927	38,000	4,408,000	3,526,000
Sorghum sirup	1928	40,000	2,800,000 ^c	2,520,000
	1927	44,000	3,520,000 ^c	2,992,000

^a bales, ^b tons, ^c gallons.

AGRICULTURE. The following table gives the acreage, production and value of the principal crops in 1927 and 1928:

MINERAL PRODUCTION. The rank of the State as a mineral producer, seventeenth in 1926, is due chiefly to its petroleum output and to natural gas. There were produced in 1927, 40,179,000 barrels of petroleum; in 1926, 53,332,000; in value, \$43,000,000 (estimated) for 1927 as against \$64,600,000 for 1926. The State ranked fifth in 1927 as a petroleum producer. Natural gas production was 43,566,000 M cubic feet in 1926, the year of latest available figures, and in 1925, 41,878,000; in value, it was \$5,817,000 for 1926, and for 1925, \$5,394,000. Gasoline was obtained from natural gas to the quantity of 36,300,000 gallons in 1927 as against 30,385,000 in 1926; and to the value of \$2,468,000 in 1927 and \$2,867,000 in 1926. Coal production declined to 1,548,834 net tons for 1927 from 1,459,017 for 1926; in value, it was \$5,393,000 for 1927 and for 1926, \$5,497,000. The production of bauxite, an aluminum ore, was less large than in some previous years, but continued to form the chief part of the domestic production. It was for 1927, 303,830 long tons; for 1926, 371,570 long tons; in value, \$1,892,860 for 1927 as against \$2,298,550 for 1926. The chief of the other products were stone, sand, and gravel. The total mineral production of the State for 1926 was \$84,485,672; for 1925, \$87,185,532.

FINANCE. State expenditures in the year ending June 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$13,192,622 (of which \$4,011,789 was for local education); for interest on debt, \$157,667; for permanent improvements, \$7,343,863; total, \$20,694,152 (of which \$9,060,701 was for highways, \$2,679,431 being for maintenance and \$6,381,720 for construction). Revenues were \$20,311,611. Property and special taxes supplied 39.3 per cent; sales of licenses and gasoline tax, 43.1 per cent; earnings of departments and remuneration for officials' services, 4.8 per cent. Property valuation was \$614,383,153; State taxation thereon, \$5,345,133. Net State funded debt, June 30, 1927, was \$3,017,087.

TRANSPORTATION. The total mileage of railroad line under operation on Jan. 1, 1928, was 4872.78. There was built in 1928, 0.66 mile of additional first track.

EDUCATION. The State department of education in concert with the State Education Association engaged in the year in an endeavor to give publicity to school needs, in anticipation of the legislative session of 1929. The movement to standardize elementary schools was stressed. Apportionment from the State school fund in 1926-27 was made to counties on the per capita basis, at the rate approximately of \$6 per capita. The income of the fund for this purpose was derived chiefly from a severance tax, a cigar and cigarette tax, and a 3-mill State tax. The school population in 1926 was estimated at 626,730. There were enrolled in the public schools in the academic year 1925-26, 382,172 white pupils, and 114,755 colored. In the elementary schools were 349,601 whites and 112,754 Negroes; in the high schools, 32,571 whites and 2181 Negroes.

CHARITIES AND CORRECTIONS. The State legislature in its session of 1928 passed an act to decentralize the control of the various State institutions for the care or custody of individuals.

This act abolished the State Board of Charities and Corrections, which had acted as the central State welfare authority under a statute of 1925. It placed the control of the State institutions severally in the hands of boards of honorary trustees. These trustees had power of appointment of superintendents, who in turn received the entire power of immediate conduct and management of the several institutions. The institutions thus affected were: State Hospital for Nervous Diseases, Little Rock, with which were grouped the State Hospital Dairy Farm; State Penitentiary, Little Rock; Confederate Home, at Sweet Home; Boys' Industrial School, near Pine Bluff; State Farm for Women, near Jacksonville; Arkansas State Training School for Girls, near Alexander; State Tuberculosis Sanatorium for Negroes; School for the Blind and School for the Deaf (under one board). Powers of parole recommendation were put in the hands of the boards of the reformatory institutions; a special parole officer was provided for the State Penitentiary Board. A State purchasing officer was created to contract for all purchases for institutions. The inmates of the penitentiary on Jan. 1, 1928, numbered 1088, of whom 368 were colored. From Jan. 1, 1927, to the end of 1928, 1198 prisoners were released on parole. Of 721 paroled in 1928, 512 made satisfactory reports under the law requiring them to obtain work with bonded employers within 6 months, and 82 were finally discharged; 81 failed to make required reports.

POLITICAL AND OTHER EVENTS. Arkansas sold in March an issue of \$13,000,000 of $4\frac{1}{4}$ per cent highway bonds to defray a part of its road building costs of preceding years. Labor troubles occurred in the coal mines of the State in April, where the operation of the Jacksonville wage scale came to an end on April 1, and the operators fell back on the lower wage scale of 1917. The 38th annual reunion of the United Confederate Veterans was held at Little Rock on July 8.

ELECTION. In the National election of November 6 Arkansas was one of the six Southern States that gave pluralities for the Democratic candidates, Smith and Robinson. To this result it was led largely by loyalty to Joseph T. Robinson, the vice-presidential candidate, a native and citizen of the State. The Democratic presidential plurality was much reduced from that of 1924; the popular vote for President in 1928 was: Smith (Democrat), 119,196; Hoover (Republican), 77,751. Harvey Parnell, Democrat, was elected governor, defeating M. D. Bowers, Republican. Seven Democrats were elected to the House of Representatives, of whom six were the incumbents.

A State act was offered by process of initiative, to forbid the teaching of the theory of evolution in schools or colleges deriving support from State contributions, and was passed by a majority of several thousand on the referendum vote. This act, derided by its opponents as the "Monkey Bill," was modeled on that of Tennessee, under which had occurred the Scopes prosecution at Dayton in 1925. The passage of the act by referendum was bitterly fought by Charles Smith of New York, President of the American Association for the Advancement of Atheism, who set up headquarters at Little Rock and conducted a campaign which led to his being imprisoned for expressions in contravention of a city ordinance prohibiting the use of the name of the Deity save "in veneration and worship."

Four amendments to the State constitution were ratified by popular vote on November 6. These were Amendments 15-18, inclusive. They provided, respectively, for increased salaries to State officers and members of the legislature, for verdicts in civil cases on the finding of 9 out of the 12 members of a jury, for authority to counties to build jails and lay a one-half-cent property tax to defray the cost, and for authority to Little Rock to vote a special tax to provide means for encouraging manufactories and river transportation facilities.

The following officers were elected in 1928 to serve from 1929: Governor, Harvey Parnell; Secretary of State, Jim B. Higgins; Treasurer, Ralph Koonce; Auditor, J. O. Humphries; Attorney-General, Hal L. Norwood; Superintendent of Public Instruction, J. P. Womack.

OFFICERS (1928): Governor, John E. Martineau (resigned); Lieutenant-Governor (succeeded as Governor), Harvey Parnell; Secretary of State, J. B. Higgins; State Treasurer, Ralph Koonce; Auditor, J. C. Cone; Attorney-General, H. W. Applegate; Commissioner of State Lands, Highways, and Improvements, Dwight H. Blackwood; Commissioner of Mines, Manufactures, and Agriculture, William N. Wilkes; Superintendent of Public Instruction, J. P. Womack.

JUDICIARY. Chief Justice, Jesse C. Hart; Associate Justices, Carroll D. Wood; Frank G. Smith; T. H. Humphreys; William F. Kirby; Thomas M. Mehaffy; E. L. McHaney.

ARKANSAS, UNIVERSITY OF. A coeducation-al State institution at Fayetteville, Arkansas; founded in 1871; comprising colleges of arts and sciences; education; engineering; agriculture (including experiment station); a graduate school; and schools of law, business administration, and medicine, the last named being at Little Rock. In the autumn of 1928 the enrollment was approximately 1900 and for the summer session of 1928 it was 850. The number of faculty members, including administrative officers, was 196 for the year 1928-29. The number of volumes in the library approximated 90,000; and the productive funds amounted to \$132,000, and the income for the year 1928-29 about \$1,200,000. Two new buildings for the college of engineering and college of agriculture, costing, with equipment, more than \$700,000, which were occupied by the respective colleges in 1927, are the first units to be added under a comprehensive building programme adopted by the legislature for execution within a five-year period. President, John Clinton Futrell, LL.D.

ARMAMENT, LIMITATION OF NAVAL. See NAVAL PROGRESS.

ARMENIA. A term applied since Apr. 2, 1921, to the new state known as the Socialist Soviet Republic of Armenia, or the Republic of Erivan. Before the World War, Armenia sometimes indicated the Armenian territories of the former Turkish Empire and sometimes the entire region in which the dominant race element was Armenian. In the former Turkish Empire the Armenians constituted about 38.9 per cent of the population in the following vilayets: Erzerum, Bitlis, Kharput, Diarbekr, Sivas, and Van; being in the minority in the first five and a majority in the last-named. The present number of Armenians in the Turkish Republic is unknown, a large part of the Armenian element having disappeared from Anatolia during the War and afterwards as a result of mas-

saecres, deportations, and migrations. The population of the former Turkish Empire known as Armenia and Kurdistan was given at 2,470,900.

SOCIALIST SOVIET REPUBLIC OF ARMENIA. On Apr. 2, 1921, Armenia was proclaimed a Soviet Republic. It comprises the southeast frontier region of Transcaucasia, which formerly belonged to the Russian Empire, but which in November, 1917, split off from Bolshevik Russia. The entire Transcaucasian region comprised the three main peoples, Armenians, Georgians, and Tartars, and was at first constituted into a federal republic, which lasted only a few weeks, however, due to the diversities of race and language. It dissolved into three parts, the Armenian Republic, Georgia, and Azerbaijan, each of which declared its independence. Although the Armenian Republic was recognized by the Allies in 1920, it soon fell under the sway of the Bolsheviks and was absorbed into their federation. The area is 11,680 square miles, and the population in 1926 was given at 867,671, 85 per cent of which was Armenian. The school attendance in 1925 was given at 81,000 pupils.

Agriculture, which is partly carried on with the aid of irrigation, is the chief industry of the people. Among the leading products are wheat, rice, licorice root, tobacco, and cotton. The area sown in 1925 was 255,900 dessiatines, which represents the pre-war area under cultivation. The cultivation of cotton, which fell away to almost nothing after the Bolshevik Revolution, is gradually assuming its place of importance in the agricultural activities, more than 15,000 dessiatines being devoted to its culture. The mining of copper is also a leading industry, 1500 persons being engaged in this pursuit. Having no seaports, the country is almost entirely cut off from the outside world, being compelled to depend for its communications on the single Transcaucasian Railway which passes through its territory from Batum to Baku. The capital, Eriwan, has a population of about 90,000.

ARMIES. See **MILITARY PROGRESS.**

ARMSTRONG, EDWARD. English historian and educator, died at Oxford, England, April 15. He was born at Grahamstown, South Africa, Mar. 3, 1846. He was educated at Exeter College, Oxford, becoming a fellow at Queen's College in 1869 and a tutor in 1870. After serving as assistant master of Rugby School, 1871-73, he returned to Oxford, and for many years was prominently identified with Queen's College. His researches into the history of the Renaissance in Italy gave him a virtual monopoly of teaching in that subject at Oxford. In 1926 he received the Serena Medal of the British Academy. He wrote much on history for periodicals, and also the following books: *Elizabeth Farnese* (1892); *The French Wars of Religion* (2d ed., 1904); *Lorenzo de Medici* (1897); *The Emperor Charles V* (2 vols., 1902).

ARROJADITE. See **CHEMISTRY**, under *Mineralogical Chemistry*.

ARSENICAL RESIDUE IN FRUIT. See **HORTICULTURE.**

ART EXHIBITIONS. Museums and collectors are beginning to realize more and more the advantages of unified exhibitions of schools of art or single artists, giving the public an opportunity to enjoy and compare works which cannot ordinarily be seen together. Both museums and private owners have shown a growing willingness to lend their treasures. The result has been such

a valuable series of exhibitions as the French Primitives in 1927, the German Primitives in 1928, and the Dutch Exhibition planned to be held in London in 1929. The exhibition of German Primitives was certainly the most notable event of 1928. There were also other important loan exhibitions during the past year. Two at the Metropolitan Museum in New York were particularly interesting. The showings of French Gothic tapestries and of Spanish art. The Detroit Institute of Arts also held two noteworthy loan exhibitions, one of Titian and the other of Gothic art of the thirteenth, fourteenth, and fifteenth centuries. An exhibition of Flemish primitives from the Sigmaringen collection was one of the important art events. The Hartford Museum had on view a loaned group and the Albright Gallery in Buffalo a series of impressionist exhibitions.

A number of interesting exhibitions were held in galleries in New York. The showing of the Chester Dale collection of modern French painting was perhaps the most important of these. The exhibition of Odilon Redon was excellent, the most important group of works by this artist ever shown in America. The group of Cezanne shown was the first complete exhibition in New York. There was also a single presentation of Degas, showing the entire range of his art. *A Century of French Painting* was perhaps the best of the group exhibitions.

A number of memorial exhibitions were held in various countries. The four-hundredth anniversary of Dürer's death was celebrated very thoroughly in Germany, most thoroughly, of course, in Nuremberg. Exhibitions were also held in London and in America at the Boston Museum. The memorial to Goya in Madrid was finished and a celebration took place in honor of the artist's centenary. Exhibitions of Goya's work were also held in London at the Burlington Fine Arts Club and in New York at the Metropolitan Museum. The five-hundredth anniversary of the death of Gentile da Fabriano was celebrated modestly but loyally in Fabriano, while a more solemn commemoration was given to Veronese in Venice. France took little advantage of an opportunity to honor Houdon, the greatest of the eighteenth century sculptors. Of the memorial exhibitions of Gilbert Stuart in America, the one at the Boston Museum was the best.

During the year there was a good deal of effort on the part of European countries to give America an opportunity to see more of their work. Such an exhibition as that of the London Artists' Association was designed with this intention. The same sort of thing was done even more in the decorative arts. A number of showings were arranged on steamships, principally by England, France, and the Scandinavian countries. Other groups of foreign work shown were in the Russian Exposition of Education and the Scandinavian-American exhibition.

The usual exhibitions of the summer art colonies were held at Lyme, Stockbridge, Newport, and Gloucester. Among the societies exhibiting during the year were: The Boston Society of Independents, the New York Water-Color Club, the National Association of Woman-Painters and Sculptors, the Associated Dealers in American Painting, the New Society of Artists, the Society of Independent Artists, the Salons of America, and the Whitney Studio Club.

Other exhibitions of interest in New York were the memorial exhibition of the work of Edwin Austin Abbey, of which there had never been a public view in the United States, one of the most important single exhibitions of the year, and the International Exhibition of Ceramic Art at the Metropolitan Museum, in which it was noted that the American work was among the best.

CARNEGIE INSTITUTE, PITTSBURGH. The twenty-seventh International Exhibition of Paintings was arranged on the general plan adopted in the previous year of inviting fewer artists and hanging more pictures by each artist. There were in all 381 pictures, 253 by the 62 European artists and 128 by 54 American artists. The institute for several years had been feeling its way to a more liberal art and for two years at least the choice of prizes had been much affected by the persistent protests of the independent artists and critics. The first prize, acknowledging the ascendance of the French moderns, went to André Derain for his painting, *Still Life*, a conception typical of his post-war period. The second prize was won by Pedro Pruna, a Spaniard who was associated with Pablo Picasso in Paris, and was one of the youngest artists to receive an Carnegie award. His painting was also a still life. The third prize was won by Glenn O. Coleman, an American. First honorable mention went to Mrs. Ernest Proctor, wife of the English artist, who painted under the name of Dod Proctor and had exhibited at the institute before. Other honorable mentions were: Marie Laurencin of Paris, Georgina Klitgaard, the American wife of a Danish writer, and Albert Saverys of Belgium. The prize for flower-painting offered by the Garden Club of Allegheny County was awarded to Henri Labasque. The jury was composed of Anto Carte of Belgium, Colin Gill of England, Rockwell Kent and Ernest Lawson of the United States, and was presided over by Homer Saint-Gaudens, Director of Fine Arts.

CORCORAN ART GALLERY. The eleventh exhibition of contemporary paintings was held in 1928 and aroused a good deal of interest because of its awards. The Corcoran had been slower than most galleries in recognizing the more recent painters and had been dominated until 1928 by the acknowledged academicians. The prize-winners were even more surprising than those of the Carnegie Institute. The picture, *Summer*, by Barnard Karfiol, which won the first William A. Clark Prize of \$2000 and the Corcoran Gold Medal, would probably not have been accepted for exhibition several years previously. The second William A. Clark Prize of \$1500 and the Corcoran Silver Medal went to Eugene Speicher for *Girl in White Dress*. The third Clark Prize of \$1000 and the Corcoran Bronze Medal were awarded to Frederick Carl Friesecke, and the fourth Clark Prize and the Corcoran certificate of honorable mention, to Henry Lee McFee.

PENNSYLVANIA ACADEMY. The one-hundred-and-twenty-third annual exhibition of the Academy of Fine Arts was not very different from other exhibitions of recent years. The general tone was conservative, and there were even fewer modernistic pictures than usual. The prizes were awarded as follows: Temple Gold Medal for the best picture in oil by an American painter to James Chapin for *George Marvin and his Daughter Edith*; the Jennie Sessan Gold Medal for the best landscape to Kenneth Bates, for *Day's End*,

Year's End; the Carol H. Beck Gold Medal for the best portrait by an American artist to William Paton for his portrait of Mrs. Francis R. Strawbridge; the George D. Widener Memorial Gold Medal for the most meritorious work by an American sculptor to Albert Stewart for *Polar Bear*; and the James E. McClees Gold Medal for the best group in sculpture by an American to Albert Laessle for *Duck and Turtle Fountain*; the Walter Lippincott Prize for the best figure-piece in oil by an American to Feodore Zakharov for *Reverie*; and the Mary Smith Prize for the best painting by a Philadelphia woman to Laura D. S. Ladd for *Still Life and Dahlias*.

NATIONAL ACADEMY SPRING. The one-hundred-and-third annual exhibition of the National Academy of Design was unusual in its liberal spirit toward the younger artists and outsiders. There was a good deal of encouragement for the newcomers and the greater part of the exhibit represented young and unknown artists. The first Altman Prize was won by Ernest Lawson for *Hills in Winter*. A. T. Hibbard's *Snow Mantle*, a picture that attracted immediate attention, won the Second Altman Prize. Alice Kent Stoddard received the Thomas B. Clarke Prize for her figure study of *Polly*. The first Hallgarten Prize went to Carl Lawless for *In the Mountains*, a winter scene of very good design and atmosphere. The Isaac Maynard Prize was awarded to Jean McLane for a very agreeable characterization of a young girl. The Saltus Medal for Merit was won by Laura Gardin Fraser's admirable likeness of Mrs. E. H. Harriman. The third Hallgarten Prize was given to George Byron Browne, a young student. J. E. Costigan's *Springtime* won the Speyer Memorial prize.

NATIONAL ACADEMY, WINTER. This exhibition, even more than the one in the spring, gave to the independent artists a chance to compete with the academicians on their own ground. Of the 462 works shown, there were 328 by outsiders. And the academy made good this encouragement since the prizes were awarded to comparatively unknown artists. J. M. Schwaikyer received the first Altman Prize for his *South Dakota Evening*, a picture of Western farm life. The second Altman Prize went to E. Kent Wetherill for *East Side*. The Carnegie Prize was given to John Noble for *The Big Herd*. Anna Hyatt Huntington's *Fighting Bulls*, an animated group in bronze, received the Julia A. Shaw Memorial Prize. The Thomas R. Proctor Prize for the best portrait went to Marie Danforth Page for her pleasant painting, *Sisters*. Gertrude K. Lathrop won the Helen Foster Bennett Prize with her amusing bronze donkey, *Sammy Houston*. The Elisabeth N. Watrous Gold Medal for sculpture was awarded to Attilio Piccirilli for *Una Virgine*, a figure in marble. The Francis Murphy Prize for landscape was won by Carl Wuermer for *Winter Day*. The Isidor Medal for figure composition went to Robert Spencer, for *The Exodus*.

ART INSTITUTE, CHICAGO. The forty-first annual exhibition of American Paintings and Sculpture was held as usual, with no striking differences from other years, except that the institute, like others, had opened its doors to an increasing number of young Americans. The prizes were awarded as follows: The Logan Gold Medal and Prize of \$2500 to J. Theodore Johnson for *Black Mantilla*, a rather usual portrait type; the Logan Silver Medal with \$1500 to Arthur B. Carles for

Arrangement, in which color and design are well harmonized: the Potter Palmer Gold Medal with \$1000 to Max Weber for *Still Life*; the Logan Medal with \$750 to Maurice Sterne for *Afternoon*, a distinctly modern work; the Norman Wait Harris Silver Medal with \$500 to Karl Knaths for *Barnyard*, also decidedly modern in type; the Norman Wait Harris Bronze Medal with \$300 to Adolph Borie for *Portrait of Iris Tree*; M. V. Kohnstamm Prize of \$250 to William S. Schwartz for *Talmudists*; the Peabody Prize of \$200 to Karl Oberteuffer for *Still Life*; the Martin B. Cahn Prize of \$100 to Robert Lee Eskridge for another modern work, *Stone Fishing*; the William R. French Memorial Gold Medal to John C. Johansen for *The Artist's Family*. The honorable mentions were: in landscape, Jean Crawford Adams' *Landscape No. 2*; architectural subject, Rudolph Weisenborn's *Chicago*; sculpture, Gaston Lachaise's *John Marin*; portrait or figure-piece, Umberto Romano's *Suzanna and the Elders*.

EUROPEAN EXHIBITIONS. The most noteworthy exhibition in Europe was that organized in London at Olympia by the British antique dealers. This exhibition was, on a large scale and a great number of important works of art were shown there. Other interesting European showings were: In London, a loan exhibition of Gainsborough, sculpture by Maillol, and cloud sketches by Constable, and a notable presentation of Mr. Talbot Hughes's collection of miniatures in oil by old masters, which has since been acquired entire by Dr. Rosenbach; an exhibition in Paris of Francois Xavier Winterhalter, which marks that artist's return to favor; also in Paris an exhibition of Largilliere; in Berlin exhibitions of Manet, of Van Gagh, and of Gothic tapestries; in Venice the sixteenth Biennial Exhibition of International Art in which ten nations took part; in Basel an exhibition of Gauguin; and in Seville an exhibition of ceramic art.

ARTIFICIAL SILK. See RAYON.

ARTILLERY. See MILITARY PROGRESS.

ARTINGSTALL, art'ing'stäl, SAMUEL GEORGE. American civil engineer, died August 7, at Chicago, Ill. Born in Manchester, England, Nov. 25, 1845, he came to this country with Chicago's first city engineer, E. S. Chesbrough, who had been studying the English drainage systems. Artingstall took charge of the design and management of the new water supply which derived its water from Lake Michigan. He also introduced the first intercepting sewer system, and made the first plans for the straightening of the Chicago River at Goose Island. The Sanitary District of Chicago was his proposal, and it was he who appointed the commission, upon which he worked, as an ex-officio member, to investigate the sewer situation. Artingstall designed the Twelfth Street viaduct, and carried out the plans for the first mechanical swing bridge at Rush Street. He served as city engineer until his death, having relinquished the position for a time to become chief engineer of the Chicago World's Fair of 1893. Besides his civic work, Artingstall maintained an active private practice. His extensive work outside of Chicago included the designs for the water system of Santiago, Cuba, and consultation over proposed harbor improvements in Chile. Artingstall, one of the founders of the Western Society of Engineers, was at one time its president. He also belonged to the American Society

of Civil Engineers, and to the Institution of Civil Engineers.

ART INSTITUTE, CHICAGO. See ART EXHIBITS; ART MUSEUMS.

ART MUSEUMS. The general tendency to the museums in recent years has been to give more attention to the decorative arts, not only for their own value but as a background for the painting and sculpture of various periods. This has, of course, been done in the American Wing of the Metropolitan Museum in New York. The opening of the Pennsylvania Museum at Philadelphia in the spring of 1923 presented a new and very important example of the same plan of arrangement, and was in this and other respects the most notable action of the year on the part of a museum of fine arts. The building itself is an impressive addition to the museums of the country. It is classic in design and is unusual in its use of color. Only a few of the galleries were complete for the inaugural exhibition. These occupied the principal floor of the north wing and comprised ten period rooms devoted to the English and American sections and nine galleries of European schools. The emphasis of this exhibition was on American and English work, as several of the collections of paintings recently acquired by the museum are of the American and English schools.

The Thomas B. Clarke collection of early American painting was exhibited in its entirety for the first time. Other collections on exhibition were those bequeathed to the city by William L. Elkins, George W. Elkins, William P. Willstach, and John Howard McFadden. Many valuable works of art were loaned to the museum for this exhibition, including part of the Johnson collection.

The Metropolitan Museum of Art announced the usual large number of acquisitions. A fourteenth-century Spanish tomb of one of the Counts of Urgel was installed at the Cloisters, the gift of John D. Rockefeller, Jr., Corot's *Woman Reading*, was presented by Mrs. Louise Senff Cameron. Other acquisitions were: a portrait of Moretto da Brescia, a German thirteenth-century sculpture in wood, a French fourteenth-century marble Madonna, five folio volumes of engravings after Watteau from the Six collection, *The Ford* by Claude Lorraine, and some notable additions to the Chinese and Egyptian collections.

The Boston Museum of Fine Arts opened a new wing of decorative arts, the most important event of the autumn season and comparable to the opening of the Pennsylvania Museum. The classical department of the museum acquired a collection of Greek gems assembled by Edward Perry, a number of which were formerly in the famous Lewes collection. The museum also added to its collections a rare cloisonné enamel of the eleventh century representing St. Nicholas, a product of the best period of Byzantine cloisonné. Other acquisitions were: A portrait of Alessandro Farnese by Tintoretto, prints from the Saxony collection, important examples of fifteenth- and sixteenth-century sculpture, early Spanish frescoes, four paintings of the Sung dynasty, added by Dr. Denman Ross to his collection, and a group of drawings by nineteenth-century artists.

The Detroit Institute of Arts acquired paintings by Vrell and de Hoogh; a portrait head by Ingres, two small panels by Crivelli, a Constable, an early American landscape by John F. Ken-

sett, a Chinese fresco of the T'ang dynasty, and additions to its collection of colonial furniture. Other traditions were: four pictures by Derain, works by Lancret, Robert, Fragonard, eighteenth-century French furniture, and the *Bourbon Madonna* by Bellini.

The Charles W. Harkness bequest to the Cleveland Museum of Art was completed, two of the eleven paintings having been received several years previously. Other acquisitions were: *The Race Track*, by Ryder, a sculptured head of Alexander, a portrait by Veronese, a French primitive, and an ivory plenary cover.

The Minneapolis Institute of Arts installed a new sixteenth-century room and received as gifts over five thousand prints and a picture of John the Baptist by Guido Reni.

The Carnegie Institute at Pittsburgh bought the *Still Life* by Derain which won the first prize at the International exhibition. The institute also acquired examples by Duveneck, Rockwell Kent, Ambrose McAvoy, and Charles W. Hawthorne.

The Brooklyn Museum received as a gift from Adolph Lewisohn a Madonna by Joseph Stella and sculptures by Epstein and Kai Neilsen. It also acquired a landscape by Hobbema and the Perry collection of costumes of the period 1885-1910.

The San Diego Museum purchased a Degas from the fund of its founder, Edward D. Libbey. Other acquisitions were: A portrait by Cranach, paintings by Romney and Bol, a print by Rembrandt, and a sixteenth-century tapestry representing a Calydonian boar hunt.

There were several additions to the Harrison gallery of modern French painting in Los Angeles: *Femme en Bleu*, by Degas, *Theatre d'Atelier à Montmartre*, by Utrillo, and paintings by Forain and L'hoté.

The Worcester Museum acquired an important Madonna by Raphael, from the collection of the Earl of Northbrook. The Albright Art Gallery in Buffalo bought a Degas. The Art Institute in Chicago, *La Table au Moulin Rouge*, by Toulouse-Lautrec. The Wadsworth Atheneum and Morgan Memorial in Hartford bought Tintoretto's *Hercules and Antæus* and a water-color by Daumier. The Rhode Island School of Design added to its collections an ivory dyptych and a Græco-Roman head of a goddess from the first century B.C. The acquisitions of the Denver Museum were a still life by Beuchelaer and some majolica tiles. The Indianapolis Museum acquired a portrait of Ignatz von Dollinger, by Lenbach, and the Cincinnati Museum *Bébé en Costume Blue*, by Mary Cassatt. The Rochester Museum acquired two rare Gothic tapestries and a French Gothic Madonna.

The Corcoran Gallery in Washington completed a new addition to the original gallery, built especially to receive the paintings of the W. A. Clark collection. The Yale University Gallery opened a new section and acquired the Samuel Wells Williams collection of Chinese porcelains, lacquers, glass, bronze, and woodwork. The William M. Clements Library of American History of the University of Michigan received Benjamin West's painting, *The Death of Wolfe*.

EUROPEAN MUSEUMS. The acquisitions of the British Museum include Japanese prints and illustrations by William Blake for Young's *Night Thoughts*, the latter presented by Mrs. Frances White Emerson of the United States. Sir Joseph Duveen recently made a gift to the na-

tion to enlarge the National Gallery. The National Gallery opened a new room to contain the forty-two pictures in the bequest of Dr. Ludwig Mond. The Commission of Fine Arts of the city of Paris accepted the gift of the Ernest Cognacq collections which were to be housed in a special building near the Opéra in accordance with the wishes of the donor. The Louvre acquired the famous "Laborde head," a fragment from the occidental frieze of the Parthenon, and Manet's portrait of Mallarmé. The Rijksmuseum recently added *The Sick Child*, by Metsu, from the Huldinsky collection; a painting by Pieter de Hoogh, and a study for Rembrandt's *Lesson in Anatomy*, from the Six collection, and a portrait of Alessandro de' Medici, by Pontormo. The Kröller collection of Van Gogh is to be kept in Holland. The Kunsthistorisches Museum in Vienna has acquired a *St. Jerome*, by Lucas Cranach. There is to be a national gallery in Poland and a new Marco Polo Museum in Venice.

ART SALES. By far the most important event of the 1928 auction season, or of any auction season, in America, was the sale of the collection of the late Judge Elbert H. Gary. The total of the four sessions, \$2,297,763, was the highest ever realized for the sale of a single collection, breaking the record formerly held by the Yerkes collection in 1910 which brought \$2,207,866. The first session was given over to the thirty-nine paintings in the collection. With the exception of Rembrandt's *Warrior Putting On Armour*, Hals's *Young Cavalier*, and a self-portrait by Fragonard, the highest prices went for the eighteenth-century English school, of which the collection contained notable examples. *The Harvest Wagon*, by Gainsborough, was bid in by Sir Joseph Duveen for \$360,000, the highest figure in the sale. Hoppner's portrait of Lady Dashwood-King brought \$90,000, going higher than the Rembrandt. Furniture, porcelain, rugs, etc. were sold in the remaining sessions. Houdon's bust of his daughter Sobine brought \$245,000, and a royal Ispahan palace carpet \$106,000.

The sale next in importance was that of the Salomon collection, formerly the property of the late William Salomon of New York, which in four sessions reached a total of \$675,531. The finest pieces were reserved for the last session, which brought \$498,160. This was one of the largest sales of French furniture and art of the eighteenth century ever held in America. Besides furniture, the collection contained paintings, sculpture, tapestries, clocks, and other *objets d'art*. A marble bust of Madame de Wailly, by Augustin Pajou, went to a dealer for \$28,000. A portrait of the Chevalier de Bellant, by Jean Honoré Fragonard, brought \$24,000. Mrs. Elisha Walker paid \$44,000 for seven pieces of carved and tapestry-covered Louis XVI furniture and \$17,000 each for two sculptured marble groups by Pajou.

The third large auction of the year was that of the collection of the late Charles H. Senff, which reached a total of \$580,375. The Dutch School predominated in the first session. The highest prices were paid for Hals's *Portrait of a Lady*, \$55,000, Velasquez's *Portrait of General Marchese Spinola*, \$53,000, the original price of which was only \$6000, and Hals's *Portrait of a Dutch Burgher*, \$47,500. The second session was concerned principally with the Barbizon school, which, with the exception of Corot, went for distinctly less than the collector paid for them. The

event of this session was the sale for \$31,000 of Corot's *Woman Reading* and is significant in showing the increasing value of Corot's figure pieces. This picture was bought by Louise Senff Cameron and later was presented to the Metropolitan Museum of Art. Dupré, Daubigny, Rousseau, and Diaz were sold at a loss.

Other sales of interest were the George S. Palmer collection of colonial and English furniture, paintings, etc. which realized \$198,406.50, and the sale of duplicates in the collection of sculpture of the Metropolitan Museum of Art. The importance of the latter is that it was the first time such a sale had been held.

The London season opened brilliantly with the sale at Christie's of the remaining pictures in the Holford collection, principally Dutch, with some German, French, and English, a remarkable group of pictures. The high figures obtained in this sale, even higher than had been expected, were evidence of the growing popularity of the Dutch school. One of the most significant items was a portrait of a young man by Petrus Christus, which brought \$75,117. The astonishing price of \$67,068 was paid for Susterman's portrait of Gian Carlo de' Medici. It was, of course, no surprise that Rembrandt should have commanded the largest price, but of the two pictures, *Portrait of a Man Holding the Torch*, \$257,544, and *Portrait of a Young Man with a Cleft Chin*, \$236,082, it had been expected that the latter would go higher, since it was supposed to represent Rembrandt's own son. The total of the two days was \$2,032,575, the amount received the first day, \$1,776,000, being the largest amount ever realized in a single sitting.

The extensive collections of Sir Hercules Read were dispersed at auction at Sotheby's in November. This collection, containing especially Oriental porcelains and bronzes and Græco-Roman and Egyptian antiquities, made one of the most varied and interesting sales of the season.

During the autumn of 1928 the collector's centre of interest was Amsterdam, where several important auctions were held. The first of the collections sold, the Six collection, derives its fame from the connection of its founder, Burgomaster Jan Six, with Rembrandt, and it was probable that the part of the collection formed by Jan Six himself was selected with Rembrandt's advice. The larger portion, however, had been added by later members of the Six family, and, as many of the greatest treasures had been disposed of from time to time, some going to the Rijksmuseum, and as others, including Rembrandt's portrait of Jan Six, were being retained by the family, the group offered for sale was far from being the complete collection or even its most valuable part. The sixty-four paintings and etchings in the sale brought a total of \$925,012. The highest price, \$144,000, was paid for *The Village in the Wood*, by Hobema, which, together with *Dutch Interior*, by Pieter der Hooch, \$61,000, were to be brought to America. Rembrandt's etching of Jan Six brought \$39,600, the highest price ever paid for an etching. *The Woman Eating Oysters*, by Jan Steen, was sold for \$83,600, and *The Letter*, by Terborch, for \$127,600; *Juno*, or *The Listening Girl*, by Nicholas Maes, brought \$22,000, and the *Church of St. Marie, Utrecht*, by Pieter Jansz Saenredam, about \$27,000.

The sale of part of the collection of Baron von Nemes in Amsterdam late in the autumn brought

lower prices than had been expected, in contrast to the inflated prices of the Six sale. This collection was particularly noted for its El Grecos; it contained also works of the Italian, Flemish, and German schools. Among the important pictures were: *The Immaculate Conception*, by El-Greco, which brought £14,580, the highest price in the sale; *Don Francesco de Savedra*, by Gova, £6,250; *Susanna at the Bath*, by Tintoretto, £6583; *The Adoration of the Magi*, attributed to Jacopo del Sellaio, £4583; and *The Judgment of Paris*, by Lucas Cranach, £4333.

Early in the summer the well-known collection of L. de Spiridan of Rome was sold in Amsterdam. The important feature of this sale was the painting of *Leda and the Swan*, which has been accepted as an authentic work by Leonardo da Vinci. It sold for about 221,000 florins. A small wooden panel by Fra Angelico, in an excellent state of preservation was also an interesting item of the sale. It brought 37,000 florins. The same amount was paid for a fine example of Carlo Crivelli, a *Madonna and Child* ornamented with glass jewels.

Collectors turned again to Germany as a centre of art for the first time since the War. The sale of the Huldinsky collection, one of the finest in Germany, brought many connoisseurs to Berlin. The gathering of this remarkable group of pictures owed much to the advice of Dr. Wilhelm von Bode of the Kaiser Friedrich Museum, and showed evidence of the personal enthusiasm of the collector himself. The total of this sale was something more than 5,000,000 marks. The largest price, 570,000 marks, was paid for Rembrandt's portrait of Hendrickje Stoffels, *The Portrait of the Painter Franz Post*, by Hals, brought 305,000 marks. *The Letter*, by Terborch, was sold to a Dutch collector for 165,000 marks and subsequently was resold at the Six sale for considerably more. A small portrait by Holbein brought 155,000 marks and a panel by Botticelli, *The Annunciation*, was acquired for 210,000 marks.

Another auction of considerable interest was held in Berlin. A collection of art treasures, principally from palaces and museums in Leninograd, were sold by order of the Soviet authorities. The paintings and furniture offered for sale, mostly eighteenth-century French art, brought a total of 3,000,000 marks.

In Leipzig the sale, in the beginning of the summer, of prints at Boerner's was an event of the year. Early Italian engravings and engravings by Rembrandt were the feature of the sale. Two rare copies of Rembrandt's *Presentation in the Temple* brought respectively 43,000 and 35,000 marks. The total of the sale was 1,000,000 marks. Another sale of Dutch, Flemish, and German prints was held at Boerner's in November.

An important sale of modern French paintings and drawings was held in Paris. Dr. Soubies's collection, including an unusual group by Matisse, Cézanne, and Derain, brought a total of 3,142,000 francs. The highest price, 360,000 francs, going for Cézanne's *Jeune Homme au Petit Chapeau*. Among other notable events in France was the sale by the artist's family of the collection of Camille Pissarro. Many of Pissarro's most important paintings had since his death remained in the possession of the family. In this sale fifty-nine were offered for sale as well as thirty-three pictures by Monet, Seurat, Guilumin, Mary Cassatt, and others. Other points of

interest in the Paris season were the sales of the art collection of late Count Robert de Montesquiou-Fézensac and of prints, etchings, lithographs, and water-colors from the collection of Lods Delteil. The latter sale, a few months after the death of M. Delteil, attracted numerous connoisseurs to Paris. M. Delteil, an authority in his field, specialized in prints of the nineteenth century. Several rare Meryons were sold, as well as prints by Delacroix, Degas, Daumier, Monet, and others.

ASHANTI. See GOLD COAST.

ASIA. See CHINA, JAPAN, and the other articles on the subdivisions of the continent. See also the articles on ARCHÆOLOGY and EXPLORATION.

ASIR. See ARABIA.

ASPHALT. The statistics of this industry for the year 1927 reflect the demands for good roads by the population of the United States and continued building activity. Asphalt is used chiefly in paving, and though it met keen competition from concrete and coal tars, its consumption increased during 1927. The sales of natural asphalt and related bitumens at mines in the United States amounted to 839,040 short tons, valued at \$5,605,850, which represented a material gain over 1926, due chiefly to developments in Texas in sales of bituminous rock, the chief product of this group. Sales of asphalt and asphaltic materials manufactured from petroleum amounted to 3,951,450 short tons, an increase of 14 per cent over the 1926 production. Of the 1927 total sales, 1,525,420 tons, valued at \$19,019,150, were produced from domestic crude petroleum, and 2,426,030 tons, valued at \$35,771,940, from foreign petroleum. Of the manufactured asphalt, the paving variety comprised 42 per cent of the total output, while the roofing and waterproofing branch of the industry used more than 1,000,000 tons of petroleum asphalt in 1927, which represented a larger increase over the previous year than was shown by paving asphalts. Imports of native asphalt and bituminous rock into the United States during 1927 amounted to 158,097 short tons, an increase of 15,465 tons over 1926, or an 11 per cent gain. Trinidad (including Tobago) and Venezuela furnished 96 per cent of the total imports. Imports of petroleum asphalt amounted to 385,031 short tons, a gain of 163 per cent over 1926, which reflects the rapid increase in the use of petroleum asphalt throughout the world. Exports of petroleum asphalt amounted to 385,031 tons in 1927, and were valued at \$3,325,413, as compared with 146,589 tons and a valuation of \$3,183,746 in 1926.

ASQUITH, HERBERT HENRY, FIRST EARL OF OXFORD AND ASQUITH. English statesman, died at Sutton Courtenay, Berkshire, England, February 15. He was born at Morley, Yorkshire, Sept. 12, 1852, and was educated at the City of London School, where he won a Balliol, Oxford, scholarship. After being graduated from Balliol with a first class in letters, he read law, and was called to the bar at Lincoln's Inn in 1876. His career as a barrister was notably successful, and he was connected with famous cases. He won widespread public recognition by his cross-examination of Mr. Macdonald, manager of the *London Times*, in the famous case of Parnell against the *Times* over the Piggott forgeries. He defended John Burns for his participation in the so-called labor riot in Trafalgar Square, London, in 1887, losing the case but enhancing his reputation. In

1889 Asquith took a prominent part as counsel for the Irish Nationalists before the Parnell Commission. He entered Parliament as a Home Ruler in 1886, winning the notice and the favor of Gladstone, who made him the home secretary in 1892. In that office he aroused opposition from labor by his stern measures against disorder, but his course was generally commended by the public. Although never eminent as an orator, he was an effective debater at this and subsequent stages of his long political career. In 1895, when the Liberals were defeated, he went out of office with the rest of the cabinet. During the period of Conservative rule, 1895-1905, Asquith, while retaining his membership in the House of Commons, devoted himself mainly to the practice of his profession, with much success. His reputation as a politician also increased steadily, and he was noted especially as an opponent of the policy of protection. In 1905, when Sir Henry Campbell-Bannerman, Liberal, became Premier, Asquith was the most prominent member of the cabinet, as chancellor of the exchequer, and, owing to the feeble health of his chief, was virtually the prime minister. Campbell-Bannerman died in 1908, and Asquith became head of the Government.

He was prime minister for eight years, holding the office for a longer time than any other man in modern days save Lord Liverpool. His incumbency of the office was one of the stormiest periods in English history, embracing as it did in its early years the contests over the Lloyd George labor policies, the abolition of the veto power of the House of Lords (forced through in order to bring to a successful conclusion the battle for Irish home rule), the woman-suffrage question, and the "revolt" in Ireland, and, in its later period, the first years of the World War. In May, 1915, came the reorganization of the cabinet to admit the leaders of the opposition, and Asquith yielded the premiership to Lloyd George. From that time until the election of December, 1918, Asquith was virtually in opposition, while advocating vigorous prosecution of the War. The Armistice came in November, 1918, and in the December election of that year Asquith lost the seat in Parliament, for East Fifehire, which he had held for thirty-two years. In 1920 he was returned as a member for Paisley. From that time until 1926 he and Lloyd George were nominally rivals for the leadership of the Liberal party. In 1925 Asquith left the House of Commons for the House of Lords, as first Earl of Oxford and Asquith, and in the following year resigned as party leader, owing to his poor health. His *Memories and Reflections*, containing interesting comments on his contemporaries and reflections on his experiences, was published in 1928, several months after his death.

His second wife, known popularly as "Margot" Asquith, astonished the world in 1922 by her autobiography, in which she made frank revelations concerning prominent men and women alive and dead. Later she published other books which also attracted much attention.

ASTRONOMY. Coördinate in interest and importance with the recent work on the internal structure of stars, are the investigations of Milne and others on the theory of stellar atmospheres and of the production of spectrum lines therein. It has been shown that in the reversing layer of a star, radiation pressure commences to be increasingly effective in support-

ing atoms against gravity, and in the chromosphere the atoms are supported almost entirely by such pressure. The pressure in question, however, is that arising from the *selective* absorption that produces the dark lines in stellar spectra; in contradistinction to the *general* radiation pressure so important in the interior of a gaseous star, this selective radiation pressure begins to be important only near the outside: The pressure exerted by radiation of any particular wave-length is proportional jointly to the net outward flux of radiation of that wave-length and to the degree of obstruction offered by the absorption coefficient; at a point in the stellar interior, the inward and the outward streams of radiation of a wave-length close to one of strong selective absorption are very nearly equal, since each (being unable to penetrate far) must have originated close by; but near the boundary there is little inward flux, the atoms are exposed to the full brunt of the outward stream alone, and the intense selective opacity gives rise to a large unbalanced radiation pressure which pushes the atoms outward. Internal mechanical equilibrium under a steep pressure gradient and general radiation pressure thus shades off into equilibrium under a small pressure gradient and strong selective radiation pressure. On this theory, as Pike has shown, most of the observed motions of the chromospheric gases can be satisfactorily accounted for. In addition, the work of Milne promises to supply a rational basis for the hitherto purely empirical method of determining stellar parallaxes spectroscopically.

STRUCTURE OF THE UNIVERSE. In the distribution of the stars over the sky, as ascertained by statistical studies of star counts in selected regions, there exist in different galactic longitudes (after allowance is made for stars blotted out by the obscuring clouds of dust and nebulosity in the great rift of the Milky Way) systematic departures in the number of stars per unit area at each galactic latitude from the *average* for that latitude, of a character which indicates that the solar system is at some distance from the centre of the galaxy, though almost exactly in its central plane. The centre of the galaxy is found to lie in the direction of Sagittarius (where five times as many stars are visible as in the opposite direction), but this centre itself, probably distant about 65,000 light years, is concealed behind the impenetrable cosmic clouds of the Milky Way.

Furthermore, the brighter stars are not distributed over the sky in exactly the same manner as the fainter ones, and a study of the differences shows that within the larger stellar system or galaxy there must be immersed a secondary aggregation, of many million stars, of which our sun is a member. This local cluster, the nucleus of which is composed of the bright, hot, massive, helium stars, comprises nearly all stars brighter than the sixth magnitude. Its diameter is about 20,000 light years, and its influence can be traced to stars of the sixteenth magnitude; probably three-fourths of all the stars in the immediate neighborhood of the sun are members. The sun is 300 light years from the centre of the local cluster and 150 light years outside its central plane; this central plane is inclined twelve degrees to that of the galaxy, and the cluster itself is a little south of the galactic plane.

It is probable that the galactic system resembles rather closely such highly resolved spiral

nebulae as Messier 33, consisting of a central condensation, knots, scattered stars, and diffuse nebulosity, the whole being 200,000 to 300,000 light years in diameter. The local cluster forms an exceptionally large and dense outlying spheroidal aggregation or knot in one of the arms. The galaxy itself is but one of many such systems, which together form a "galaxy of galaxies," and about which our information is rapidly increasing due to the notable work of Shapley and others.

Lindblad attempted to account for observed stellar motions by supposing the galaxy to consist of a number of subsystems, each in approximately dynamical equilibrium, rotating, about a common axis perpendicular to the galactic plane, with different speeds; and this theory, though presenting difficulties, has been rendered fairly plausible by recent work of Oort, Schilt, and J. S. Plaskett.

ASTROPHYSICS. At the Mount Wilson Observatory, an attempt has been made to determine the relative amounts of each of various chemical elements in the atmospheres of the sun and the stars. For this purpose, groups of related spectrum lines known as "multiplets" are used; the relative numbers of atoms involved in the production of such lines may be calculated from modern spectroscopic theories. It is found that fully a million times as many atoms are active in producing the strongest lines in the solar spectrum as in giving rise to the lines barely visible. Stellar spectra are now being regularly obtained with high dispersion on a scale comparable with that of solar spectra; and from these it is found in a like manner that the amount of vapor of iron, titanium, and similar metals in the atmospheres of the great red giants such as Betelgeuse and Antares is about one hundred times as great as on the sun; these stars have very extensive atmospheres, and the lines are produced in regions of low pressure, so that in spite of the low temperatures, the "enhanced" lines of iron and titanium are stronger than those in the solar spectrum.

Fifty-seven elements have now been found in the sun, and there can be but little doubt that all known elements are present, though the physical conditions in the sun prevent the lines of some from being intense enough to be seen; those elements not yet identified are nearly all of either high atomic weight or high ionization potential, while the elements having low ionization potentials are all known to be present; boron, the strongest lines of which lie in the unobservable ultra-violet portion of the spectrum, was recently identified in sun-spot spectra through the band spectra of its compounds. Many lines of known elements, predicted by spectroscopic theory but not yet observed in the laboratory, have recently been found among the hitherto unidentified lines in the solar spectrum. I. M. Freeman has identified nearly all the emission lines in the coronal spectrum with argon.

Planetary nebulae are stimulated to shine by the action of the radiation given out by the central star; the intensities of the nebular spectrum lines lead to an estimate of 100,000° for the temperature of the hotter of these nuclear stars. So excessively hot a star gives out a great deal of radiation of such short wave-length that it highly ionizes the nearby atoms; electrons are ejected with high speed, and by "inelastic collisions" impart just enough energy to other atoms

to put the latter into the metastable condition and cause them to radiate the characteristic nebular lines. Thus the short wave radiation from the star is transformed into the energy of motion of electrons, and thence into the nebular radiations. Longer wave-length radiation will penetrate farther into the nebula before being depleted, but will not ionize the atoms so highly, so that the planetaries consist of a series of concentric shells in which the ionization is greater the nearer the central star is approached, and this explains the relative sizes and intensities of the monochromatic images of planetaries given by a slitless spectroscope—the exciting power of the star decreases outward, and the order of size of the images is exactly that of the ease of excitation of the wave-length of the light given out by each.

Similarly in the diffuse nebulae, the lines requiring high energy for their excitation are strongest in the central regions, and fade out near the borders of the nebula before the more easily excited lines do. The reason the “metastable” lines are developed to the exclusion of the normal ones has been shown to lie in both the low density and the comparative weakness of the stimulating radiation.

The comparative rarity of bright lines in stellar spectra shows that the conditions for their formation are not normally present. Several possible causes for them have been suggested: In the case of nebulous stars, and Wolf-Rayet stars, they may be essentially fluorescent phenomena produced by the nebulous envelope. They can also originate from a special accumulation of atoms above the photosphere, as in the case of the reversal of the H and K lines produced in the solar spectrum by the floccular regions, an effect typical of many late-type dwarfs. Gerasimovich has attributed the bright lines of hydrogen and ionized iron in the emission spectra of supergiants of classes B0 to F5 to a highly penetrating radiation coming from local sources near the surface.

As a result of the extensive recent investigations of Struve and others, it is coming to be generally accepted that the fixed calcium lines in stellar spectra are due to diffused interstellar calcium clouds; the intensity of the lines is a function of distance, and the late-type stars are too near to show them.

Precise measurements of the penetrating cosmic radiation by Millikan and Cameron have led these investigators to attribute this radiation to the creation, in interstellar space, of light atoms such as helium, oxygen, silicon, magnesium, and iron, out of primordial positive and negative electrons. Jeans, however, maintains that this theory conflicts with the second law of thermodynamics, and that creation of matter is impossible; only disintegration from heavier to lighter atoms, and dissolution of matter into radiation, can take place.

STARS. The investigations of Seares and others have confirmed what Halm suspected in 1911, that there is an approximation to equality in the energies of motion of massive and of light stars; the heavy stars move more slowly, so that stellar velocities, like those of the molecules of a gas, conform to the law of equipartition of energy. This can be due only to gravitational interaction of the stars extending over *millions* of *millions* of years, and hence the stars must have an age of this order of magnitude; a great

deal of other astronomical evidence leads to the same conclusion.

Measurements of stellar radiation with delicate thermo couples by Pettit and Nicholson at Mount Wilson have shown that Sirius, though visually the brightest star, is only the third brightest radiometrically—more heat reaches the surface of the earth from both Betelgeuse and Antares than from Sirius; however, a larger part of the radiation of Sirius (which is a blue star) is lost in the earth's atmosphere, so that it actually sends more heat to the solar system than the others. A solar-type star of the sixth magnitude radiates on the whole United States about the same amount of heat as is received from the sun on one square yard; when the heat from such a star is focused on a thermo couple by the 100-inch telescope, the temperature of the receiver is increased about one half-millionth of a degree Fahrenheit, causing a current of about one twenty-billionth of an ampere to flow through the galvanometer. The image of Betelgeuse raises the temperature of the receiver by 0.015° C.

The application of modern microphotometers to the study of photographs of stellar spectra has led to many interesting results, especially at the Harvard Observatory. For example, a theory of Unsöld as to the formation of absorption lines permits the contours of the lines to be used to deduce the number of atoms of different elements in the stellar atmospheres. Boxandall has attributed the unidentified bands in the spectrum of Mira to aluminum oxide. The unusual phenomena of Nova Pictoris has led several investigators to conclude that the outburst was due to a collision between two stars.

SUN. By using plates sensitive to infra-red light of wave-length 8500 Å., G. Blunck has obtained photographs that show what appears to be the outline of the corona. After reviewing all theories of the corona yet proposed, W. Anderson has concluded that none except the Schwarzschild theory of an “electron gas” can be maintained. Pettit and Nicholson have shown that their measurements of the distribution of energy in the coronal spectrum agree with that calculated by Woltjer for sunlight diffused by an atmosphere of electrons.

COMETS AND METEORS. The observed motions of the matter in cometary tails are not yet fully understood. The material is in some way ejected from the nucleus with considerable velocity, and moves under the combined influence of gravitation and of repulsive forces from the sun. An investigation, by Bobrovnikoff, of the motions in the tail of Comet Morehouse 1908 III has shown that the repulsive force acting was exactly of the amount that Baade and Pauli have calculated would be exerted on ionized carbon dioxide molecules under radiation pressure from the sun, and the spectrum showed the light actually to consist chiefly of the “resonance” radiation of this gas. The matter was ejected directly away from the sun. These results do not agree with the Bessel-Bredichin theory of the formation of the tail out of envelopes ejected on the sunward side.

Important advances in the dynamical theory of the motions of meteors passing through the upper atmosphere have been effected by Fisher. By taking into account the influence of the earth's equatorial bulge, which draws a meteor toward the earth's surface, and of the rotation of the earth, which prevents the projection of the path on the earth from being a great circle, he has

succeeded in satisfactorily accounting for the observed motions of the great meteoric procession of Feb. 9, 1913, seen from Saskatchewan to Long Island, and by ships south of the equator.

MISCELLANEOUS. Boss, who has found that the variations in the rate of rotation of the earth revealed by the fluctuations in the motions of the sun, moon, and planets are also indicated by star positions and clock rates, suggests that these variations may be due to earth tides, both because of friction and because of a failure of the crust to settle back from high tide to its original position, thus increasing the earth's diameter and slowing up the rotation until a critical point is reached, when settling starts and the rotation speeds up again.

Three comets appeared in 1928: The first was discovered by Reinmuth at Heidelberg, February 22; the second by Giacobini at Paris, March 17; the third by Forbes at Cape Town, November 21.

The California Institute of Technology, in co-operation with the International Education Board and the Carnegie Institution of Washington, had determined to establish an astrophysical observatory having a 200-inch reflecting telescope with a mirror of fused quartz.

NECROLOGY. The list of prominent astronomers dying in 1928 includes: Edward Walter Maunder, March 21; Wm. Edward Plummer, May 22; Wm. Reid, June 8; Samuel Oppenheim, August 15; Pierre Henri Puisseux, September 28; Sydney Royston Pike, November 22.

BIBLIOGRAPHY. Important books of the year included, J. H. Jeans, *Astronomy and Cosmogony* (Cambridge, England); E. A. Fath, *Elements of Astronomy*, 2d ed. (New York); E. E. Barnard, *Atlas of Selected Regions of the Milky Way*, 2 vols. (Washington); H. Shapley and Helen E. Howarth, *Source Book in Astronomy* (New York); Scientific American Publishing Co., *Amateur Telescope Making*, 2d ed. (New York); C. E. St. John, et al., *Revision of Rowland's Preliminary Table of Solar Spectrum Wave Lengths* (Washington); J. Bauschinger, *Die Bahnbestimmung* 2te aufl. (Leipzig); C. L. Charlier, *Die Mechanik des Himmels*, 2 vols., 2te aufl. (Berlin); G. Eberhard, et al., *Handbuch der Astrophysik*, Bd. 6 (Berlin); F. Schmid, *Das Zodiakallicht* (Hamburg); F. Brioschi, *I problemi di Urania* (Milan); C. Whyte, *The Constellations and Their History* (London); T. Mary Lockyer, et al., *The Life and Work of Sir Norman Lockyer* (London); S. G. Barton and W. H. Barton, *Guide to the Constellations* (New York); T. C. Chamberlin, *The Two Solar Families* (Chicago); Mary Proctor, *Romance of the Moon* (New York); W. M. Smart, *Astrophysics* (London); W. M. Smart, *The Sun, the Stars, and the Universe* (London).

ASTROPHYSICS. See ASTRONOMY; PHYSICS.

ATHLETICS, TRACK AND FIELD. With the Olympic Games (q.v.) as the incentive, unusual activity characterized track and field athletics, particularly in the United States, Germany, and Great Britain. A list of the outstanding performers of the year 1928 would include Ray Burbuti, Robert King, Edward Hamm, Sabin Carr, Edward Houser, Frank Wykoff, Charles Borah, Lloyd Hahn, Ray Conger of the United States; Willie Ritola and Paavo Nurmi of Finland; Dr. Otto Peltzer of Germany; Pat O'Callaghan of Ireland, Percy Williams of Canada, and Lord David Burghley of England. The name of El Ouafi, the Algerian who won the Olympic Marathon, also deserves mention.

The invariably colorful indoor track season of the United States was featured by the presence among the competitors of Dr. Otto Peltzer of Germany. The visitor opened his campaign at the Millrose A. A. meet in New York City immediately after finishing a tour of some 10,000 miles and with practically no experience on indoor tracks. Nevertheless, Peltzer was able easily to win the 1000-yard run against a strong field. Ray Conger, eight days later, defeated Peltzer in the Illinois A. C. games much to the surprise of the onlookers. Soon afterward Conger triumphed over Lloyd Hahn and finally a three-cornered race between Peltzer, Hahn, and Conger was contested under the auspices of the Knights of Columbus in New York City. Here Hahn scored an impressive victory.

Among the world record performances of 1928 that of Frank Wykoff, a California high school lad, has never been approached. Young Wykoff, during Olympic trials held at Cambridge, Mass., ran the 100-meter distance four times in four hours and on each occasion equaled the world time of $1\frac{3}{5}$ seconds. This time had been tied only twice in twelve years before Wykoff's feat. Shortly before the Cambridge Olympic tests, J. Morgan Taylor broke the world record for the 400-meter hurdles by covering the distance in 52 seconds.

Four American indoor records were established during the year. James F. Quinn of Holy Cross College ran 60 yards in $6\frac{1}{2}$ seconds; Lloyd Hahn covered 880 yards in 1 minute, $51\frac{1}{2}$ seconds; Sabin W. Carr of Yale University pole-vaulted 14 feet, 1 inch; H. H. Schwartz of the Illinois A. C. put the 16-pound shot 49 feet, $67\frac{1}{2}$ inches.

Eight new American marks were set in the outdoor competitions as follows: 200 meters, Frank Wykoff, Glendale High School, Los Angeles, Calif., $20\frac{4}{5}$ seconds; 400 meters, Emerson L. Spencer, Stanford University, 47 seconds; 800 meters, Lloyd Hahn, $51\frac{1}{2}$ seconds; 1500 meters, Ray Conger, 3 minutes, 55 seconds; 10,000 meters, Joie W. Ray, Illinois A. C., 31 minutes, $28\frac{3}{4}$ seconds; 400-meter hurdles, F. Morgan Taylor, Illinois A. C., 52 seconds; running broad jump, Edward Hamm, Georgia School of Technology, 25 feet, $11\frac{1}{4}$ inches; decathlon, J. Kenneth Doherty, Cadillac A. C., Detroit, 7,600.52 points.

Women participated more generally than ever in track and field sports and several new records were set up in the various meets held throughout the United States. Notable among these achievements were; indoors, 50 yards, Helen Filkey, Illinois A. C., $6\frac{1}{5}$ seconds; 220 yards, Catherine M. Donovan, Prudential L. C. A. A., $28\frac{4}{5}$ seconds; running high jump, Mildred O. Wiley, Boston S. A., 4 feet, $11\frac{3}{4}$ inches; standing broad jump, Katherine R. Mearis, Boston S. A., 8 feet, $1\frac{1}{4}$ inches; putting 8-pound shot, Rena MacDonald, Boston S. A., 37 feet, 11 inches; 800 meters, Catherine M. Donovan, 2 minutes, $33\frac{3}{5}$ seconds.

New outdoor standards set by women in 1928 were: 50 yards, Anne Vrana, Pasadena A. and C. Club, 6 seconds; 100 meters, Elizabeth Robinson, Illinois A. C., 12 seconds; 220 yards, Elsie Schurke, Illinois A. C., $27\frac{3}{5}$ seconds; 300 meters, Rayma Wilson, Pasadena A. and C. Club, $43\frac{1}{5}$ seconds; 60-yard hurdles, Helen Filkey, Illinois A. C., 8 seconds; running broad jump, Nellie Todd, Illinois A. C., 17 feet, 11 inches; throwing baseball, Vivian Hartwick, Northern California A. C., 252 feet, 4 inches; discus, Lil-

lian Copeland, Pasadena A. and C. Club, 115 feet, 6½ inches.

In the intercollegiate competition, Stanford University won the I. C. A. A. A. championship for the second consecutive year. The Los Angeles A. C. of California captured the national senior A. A. U. title, thus making the Pacific Coast State supreme in the United States athletic world. See OLYMPIC GAMES.

ATOM. See PHYSICS.

ATOMIC WEIGHTS. See CHEMISTRY.

AUFFENBERG-KOMAROV, FIELD MARSHAL MORITZ, FREIHERR VON. Austrian soldier, died at Vienna, May 18. He was born at Troppau, in Austrian Silesia, May 22, 1852, and was educated at the cadet school, Hainsburg, and the Academy of Wiener-Neustadt. He received his commission as a lieutenant in 1871, and in 1878 was with the forces that occupied Bosnia. He advanced in the army through the grades until 1905, when he became a field marshal and served in the ministry of war. In 1907 he was inspector general of the imperial military academy, and in 1909 commanded the Fifteenth Army Corps at Sarajevo. In 1911 he became minister of war but held the portfolio a short time only, owing to the failure of his plans to increase the man-power of the Austro-Hungarian Army and strengthen the fortifications in the Tirol. In 1912 he resigned and returned to active duty as inspector general of the army. At the outbreak of the World War, von Auffenberg was held in high esteem in his country as one of its leading generals, and he increased his prestige by his victory over the Russians in the eight-day battle of Komarov, Aug. 26 to Sept. 2, 1914. As a distinction, he was permitted to add "Komarov" to his name. After the battle he succeeded in the difficult task of changing the entire front of his army and marched it southward to take part in the second battle of Lemberg. Here he delayed but could not avert the victory of the Russians, by which they won all of eastern Galicia. Auffenberg-Komarov's failure to win another victory was a bitter disappointment to Austria-Hungary, and in October, 1914, he was deprived of his command and called upon to explain, before a military tribunal, his part in the battle. He was unanimously acquitted, but subsequently played little part in the War, retiring from service in 1915. After the collapse of Austria he began to write his memoirs, and completed and published two volumes.

AULARD, ô'lâr, FRANÇOIS-VICTOR-ALPHONSE. French historian and educator, died at Paris, October 23. He was born at Montbron, Charente, July 19, 1849, and he attended the collège Sainte-Barbe, and the lycée Louis-le-Grand, later specializing in French history at l'Ecole Normale supérieure. He joined the faculty of the lycée de Nîmes, in 1871, and transferred to the lycée de Nice two years later, where he remained until 1876. He served on the Facultés des Lettres at Aix, Montpellier, Dijon, and Poitiers, from 1878 until 1884, leaving to teach for a year at the lycée Janson-de-Sailly. Recognized, through his writings and his educational work, as an authority on the French Revolution, he was appointed professor of that subject at the University of Paris, in 1885, continuing on the faculty, as honorary professor, until his death. Professor Aulard served as president of the Commission supérieure des Archives, and of the Société d'His-

toire de la Révolution. He was department chairman of the comité central of the Ligue des Droits de l'Homme, and a member of the managing committee of *Le Quotidien*. Besides being a student of history, he tried to influence the policies of his government toward reconciliation with the German Republic. He urged liberalism in articles in *l'Ère Nouvelle*, and *Progrès Civique*, and while presiding over the executive committee of the Berlin meeting of the International Federation of the League of Nations Societies, in 1927. Professor Aulard's books, which are accorded a high place among French histories, include: *Histoire politique de la Révolution française* (5th ed. 1905); *L'Eloquence parlementaire pendant la Révolution française* (2d ed., 1907); *Recueil des actes du Comité de Salut Public* (26 vols., after 1890); *Taine, historien de la Révolution* (1907); *Napoléon et le monopole universitaire* (1909); *Lettres et Bulletins de Barentin à Louis XVI, avril-juillet 1789* (1915); *La Guerre Actuelle Commentée par l'Histoire* (1916); and *Dictionnaires des Conventionnels de Auguste Kuscinski* (1916-19); *La Révolution française et le régime féodal* (1919); and *Le Patriotisme français, de la Renaissance à la Révolution* (1922); *Histoire politique de la grande guerre* (with E. Bouvier, 1924); and *Le Christianisme et la Révolution française* (1925).

AURORA. See METEOROLOGY.

AUSTRALIA, COMMONWEALTH OF. A self-governing dominion of the British Empire, consisting of the six original states (formerly colonies) of New South Wales, Victoria, Queensland, South Australia, Western Australia, and Tasmania, together with the Northern Territory and the Federal Territory, and comprising the island continent of Australia with its dependencies. The present Commonwealth dates from its proclamation in 1901, under the act of union passed in the preceding year. Of the divisions mentioned above, the Northern Territory was transferred by South Australia to the Commonwealth; and the Federal Territory consists of a former portion of New South Wales. At the beginning of 1927 the seat of the government was at Melbourne, but on May 9, 1927, the new capital at Canberra was formally opened by the Duke of York.

ESTIMATED POPULATION OF AUSTRALIA ON
MARCH 31, 1928

States and Territories	Males	Females	Total
New South Wales ..	1,231,266	1,182,632	2,413,898
Victoria	870,089	878,571	1,748,610
Queensland	477,510	425,609	903,119
South Australia	298,431	278,145	576,576
Western Australia ...	214,128	181,728	395,851
Tasmania	105,158	106,885	212,043
Northern Territory ..	3,013	1,225	4,238
Federal Capital Territory	5,014	3,371	8,385
Total	3,204,559	3,058,161	6,262,720

AREA AND POPULATION. The area of Australia is 2,974,581 square miles and the population according to the census of Apr. 4, 1921, 5,435,734. The population of Australia on Mar. 31, 1928, was estimated by the Commonwealth statistician as 6,262,720, an increase of 122,838 as compared with the total 12 months previous. The figures indicate that since the census of Apr.

4, 1921, the population increased 826,986, of which the excess of births accounted for 559,872, or 68 per cent, and excess of arrivals over departures for 267,114, or 32 per cent. The average rate of increase of population in the Commonwealth was slightly more than 2 per cent per annum.

The figures given in the table on the preceding page do not include the full-blooded aborigines, whose number was estimated at 60,000. During 1927 there were 133,162 births, 56,952 deaths, and 47,865 marriages. The population of the capital cities with their suburbs on Jan. 1, 1927, was as follows: Sydney, New South Wales, 1,070,510; Melbourne, Victoria, 944,400 (estimated by the government statistician in November, 1928, at 1,000,000); Brisbane, Queensland, 274,260; Adelaide, South Australia, 316,865; Perth, Western Australia, 184,223; Hobart, Tasmania, 55,130.

EDUCATION. Throughout Australia primary education is compulsory and free, while there exists in all states a more or less liberal provision of scholarships and bursaries to the higher state schools, to the secondary schools, and to the universities. Provided that the requisite standard is reached it is permissible for children to receive home tuition, or to attend so-called private schools. At the end of 1926 there were in the six states of the Commonwealth 11,725 schools of all kinds, with 32,188 teachers. The scholars enrolled numbered 1,147,665 and the average daily attendance was 906,665. For details of education in the respective states and territories, consult the individual articles. At the capital of each state there is a university.

PRODUCTION, ETC. According to the Commonwealth statistician and actuary, the area under the principal agricultural crops and the yield for each during the season 1925-26 was as follows: Wheat, 11,706,984 acres, 160,852,369 bushels; oats, 1,013,233 acres, 12,211,657 bushels; barley, 374,876 acres, 6,356,297 bushels; maize, 297,140 acres, 7,431,561 bushels; hay, 2,832,003 acres, 2,677,945 tons; potatoes, 139,018 acres, 322,797 tons; sugar cane, 288,872 acres, 3,965,587 tons; vineyards, 112,697 acres, 252,192 tons of grapes. The wine production amounted to 16,231,142 gallons and the value of the produce from orchards and fruit gardens was £8,043,149. The number of livestock included: Sheep, 103,563,000; cattle, 13,280,000; horses, 2,250,000; pigs, 1,128,000. The estimates for the production of wool in 1928-29 were as follows: Clip, 815,000,000 pounds; pulled wool, 35,000,000 pounds; exported on skins, 50,000,000 pounds, making a grand total of 900,000,000 pounds of wool of various grades available for export.

Statistics for manufacturing in Australia, 1925-26, showed: Number of establishments, 21,242; hands employed, 450,920; salaries and wages paid, £86,724,683; value of plant and machinery, land and buildings, £208,813,782; value of materials used, £231,834,908; value added by manufacture, £157,484,783; value of output, £402,402,917. The year 1927 was not particularly prosperous for Australian manufacturers. They seemed to be suffering from heavy production costs, and failures occurred, in some instances involving fairly large concerns. Many requests were made for additional tariff protection in order to relieve conditions in certain industries which were laboring under severe depression. Additional

protection was imposed on certain textiles, machinery, motor chassis, food, and groceries, and the Government announced that it hoped to stimulate not only production in plants already established but also to induce additional industries to commence operations. The depression of 1927 was regarded by many as only temporary and 1928 was expected to be more prosperous generally.

The value of all minerals produced in the Commonwealth of Australia in 1926 was £23,951,291. The value of the more important minerals was as follows: Gold, £2,208,839; silver and lead, £4,930,925; copper, £560,181; iron, £1,255,784; zinc, £1,462,485; tin, £825,806; coal, £11,852,961.

SUMMARY OF AUSTRALIAN FOREIGN TRADE

Item	1926-27 £	1927-28 £	Movement £
Exports:			
Merchandise	132,591,877	137,850,604	+5,258,727
Gold	12,303,306	3,744,555	-8,558,751
Total	144,895,183	141,595,159	-3,300,024
Imports:			
Merchandise	164,127,759	147,115,575	-17,012,184
Gold	588,835	1,000,975	+412,140
Total	164,716,594	148,116,550	-16,600,044
Excess of Imports	19,821,411	6,521,391	.....

AUSTRALIAN FOREIGN TRADE BY PRINCIPAL COMMODITIES

Item	1926-27 £	1927-28 £
Imports:		
Cotton and linen piece goods	10,128,947	8,594,086
Silk piece goods	6,866,738	5,963,243
Woolen piece goods	2,450,573	2,534,607
Gasoline	6,703,670	6,194,842
Mineral lubricating oil	1,153,357	937,041
Electrical machinery	7,435,467	7,133,556
Other machinery	9,214,719	9,080,826
Motor bodies and parts	1,413,880	1,117,889
Motor chassis and parts	12,764,559	7,136,921
Motor cycles, side cars, etc	688,692	484,509
Timber—		
Dressed	1,304,208	1,256,652
Undressed	3,526,618	3,804,451
Tobacco, unmanufactured	2,018,295	1,938,590
Tires, pneumatic and other	2,101,357	1,082,590
Other rubber manufactures	395,557	364,648
Crude rubber, rubber waste, etc.	2,329,719	1,959,416
Exports:		
Butter	5,465,347	6,903,918
Frozen beef	1,627,998	2,377,967
Frozen lamb	1,540,354	981,120
Frozen mutton	517,253	257,886
Dried fruits	1,649,143	1,601,831
Apples	624,040	1,633,424
Other fresh fruits	181,533	187,196
Imports:		
Rabbit skins	2,887,663	2,492,522
Sheepskins	3,440,061	4,424,711
Wool—		
Greasy	53,411,147	58,767,745
Scoured	5,820,500	6,811,818
Pig lead	3,852,792	3,511,699
Zinc	551,404	1,477,999
Wheat	20,785,414	14,629,899
Flour	6,254,316	5,229,212

COMMERCE. Australian imports and exports were lower in value in 1927-28 than in 1926-27. The most noticeable feature of the decrease was the heavy decline in imports of merchandise. For the year ending June 30, 1927, excess of imports over exports amounted to £19,821,411 and

in 1927-28 to only £6,521,391. The adverse trade balance, accordingly, declined over £13,000,000. Exports of merchandise in 1927-28 showed an expansion of £5,258,727 over shipments in 1926-27, but this was more than offset by a decrease in exports of specie and bullion. A comparison of the totals of trade for 1926-27 and 1927-28, and the movement involved, is afforded by the table given on page 73.

The values of the principal items in Australian trade in merchandise during 1927-28 are compared with those for the previous fiscal year in the accompanying table:

The greatest decrease in imports for the year occurred in receipts of motor-car chassis and parts, which showed a decline of over £5,000,000 as compared with the corresponding 1926-27 figures. There was also a noticeable decrease in imports of textiles. Higher prices for wool raised the value of exports of this commodity considerably. The poorer wheat harvest on the other hand, resulted in a decrease of £6,155,515 in the value of wheat sent overseas. Exports of sheepskins increased nearly £1,000,000, but the value of rabbit skins declined. Butter exports increased £1,438,571 in 1927-28 as compared with

bullion, and merchandise, respectively, for 1926-27. There was a decrease of but £1,390,414 in 1927-28 in exports of merchandise. The total value of imports from the United States to Australia in 1927-28 amounted to £35,520,981, compared with £41,331,798 in 1926-27, a decrease of £5,810,817.

FINANCE. The budget estimates for 1927-28 were presented to Parliament by the Commonwealth treasurer on Sept. 28, 1927—somewhat later than usual. The delay was due to the transfer of the seat of government from Melbourne to Canberra, which has now become the permanent home of the Commonwealth Government. Total ordinary revenues provided in the budget (consolidated revenue fund) are estimated at £78,860,190, while total ordinary expenditures from consolidated revenues, including contribution toward payment of interest charges on state debts, are estimated at £78,812,329. Provision is also made for extraordinary expenditures of £9,000,000 for Commonwealth purposes out of the loan fund. The budget estimates, ordinary revenues, and expenditures for 1927-28 are shown in the following table:

COMMONWEALTH BUDGET ESTIMATES,
(From Commonwealth Treasurer's statement)

CONSOLIDATED REVENUE FUND, 1927-28
presented to Parliament of Sept. 28, 1927)

Revenue	1926-27 (actual) £	1927-28 (estimated) £	Expenditures	1926-27 (actual) £	1927-28 (estimated) £
Indirect taxation:			War, repatriation, and defense ^a	34,000,365	34,326,658
Customs duties	31,832,600	33,150,000	Special appropriations:		
Excise duties	11,719,878	11,650,000	Interest and sinking fund ^b	1,317,178	1,655,320
Total indirect taxes	43,552,478	44,800,000	Invalid and old-age pensions	9,144,589	9,400,000
Direct taxation:			Maternity allowance	660,280	675,000
Land tax	2,615,900	2,170,000	Other ^c	3,288,495	3,121,010
Estate duties	1,363,351	1,400,000	Ordinary departmental expenses ^d	2,937,233	3,079,774
Income tax	11,126,278	9,800,000	Additions, new works, and buildings	182,532	284,049
Entertainments tax	866,159	380,000	Postmaster General's department	11,285,899	12,223,353
War-time profits tax	-28,357		Commonwealth railways	902,806	970,225
Total direct taxes	15,442,331	13,750,000	Commonwealth Territories ..	411,220	615,405
Business undertakings:			Interest on loans raised for States	2,623,852	3,000,000
Post office, telegraph, and telephones	11,648,638	12,891,000	Miscellaneous services	515,277	313,623
Commonwealth railways	477,734	575,000	Total ordinary expenditures	67,269,726	69,664,417
Total business undertakings	12,126,372	12,966,000	Capitation payments and special grants to States	8,262,912	678,000 ^e
Commonwealth Territories	47,175	169,190	Contributions toward interest and sinking fund on State debts		8,469,912
Other revenues	6,999,879	7,175,000	Total expenditures	75,532,638	78,812,329
Total revenues	78,168,235	78,860,190	Surplus	2,635,597	47,861

^a Including interest and sinking fund on Commonwealth debts.

^b Other than on war loans.

^c Includes grants to States for main roads.

^d Other than defense and post office.

^e Special grants to Tasmania and Western Australia only.

1926-27 shipments. A decline of over £1,000,000 appeared in exports of flour.

Trade between Australia and the United States suffered considerably in the year ended June 30, 1928, because of depressed conditions throughout the Commonwealth, although the United States' share of Australia's total imports declined but slightly. The value of exports from Australia to the United States in 1927-28 amounted to £9,113,353 as compared with £18,502,834 in 1926-27. Of the 1927-28 total £2,001,422 represented exports of specie and bullion and £7,111,931 represented exports of merchandise, as compared with £10,000,590, and £8,502,244, for specie and

The budget for 1927-28 was based on the assumption that the financial agreement between the States and Commonwealth would receive the consent of the state legislatures and the Commonwealth Parliament. Accordingly provision was made in the budget for the contribution by the Federal Government of the sum of £8,469,912 toward interest and sinking fund on the states' debts. In line with this agreement there was provided an additional sum of £165,533 to cover increased interest payments to the states on the value of properties transferred to the Commonwealth upon and after federation. Other salient features of the budget were the reductions in

income- and land-tax rates. The income-tax rate reached a peak in 1920-21 when it was nearly 71 per cent above the original rate adopted in 1915. Reductions were inaugurated in 1922-23 and by 1925-26 the rate was reduced to 20 per cent above the original. It was proposed, in order to give further relief to the individual taxpayer, to reduce the rate to 10 per cent above the original. A 10 per cent reduction was also proposed in the land tax. The total reductions thus effected were expected to be partly covered by increased receipts from customs and excise duties.

which had beset the Commonwealth in the last few years, when he wished to keep labor out of power. One of these disputes occurred during September, when a strike, accompanied by violence, occurred in the shipping industry. The strikers defied the governmental channels which had been set up to meet such emergencies, and for a time it appeared that open revolt against the Commonwealth Government might take place, but strong measures by the central Government and the Governor of South Australia, soon had the strike well in hand, although the effect on

COMBINED COMMONWEALTH AND STATE PUBLIC DEBT, ON JUNE 30, 1921 TO 1927

<i>Debt on June 30—</i>	<i>Public debt of Commonwealth</i>	<i>Public debt of States</i>	<i>Aggregate</i>	<i>Deduction for duplication</i>	<i>Combined debt</i>
1921	£401,720,024	£474,847,459	£ 876,567,483	£ 48,551,637	£ 828,015,846
1922	416,070,509	523,489,389	939,559,898	55,182,665	884,377,233
1923	410,996,316	550,878,641	961,874,957	56,390,011	905,484,946
1924	415,600,099	595,364,487	1,010,964,586	55,953,000	955,011,586
1925	430,948,062	606,058,254	1,037,006,316	71,135,472	965,870,844
1926	458,443,351	643,452,406	1,101,895,757	87,531,051	1,014,364,700
1927	461,067,742	675,796,456	1,136,864,198	105,491,784	1,031,372,414 ^a
1928	494,129,100	.....	.....	.....	.....

^a Includes £2,024,022 representing net amount of Commonwealth indebtedness on account of Federal Capital Territory.

COMMUNICATIONS. The total number of registered vessels in 1926 was 2232 of 398,799 tons. In the oversea trade of 1926-27, 1624 vessels of 5,558,875 tons entered and 1637 of 5,605,100 tons cleared the ports of Australia. The total mileage of railways open to traffic in 1927 was 25,513 miles.

GOVERNMENT. The executive power is vested in the king, who acts through a governor-general, assisted by an executive council of responsible ministers, who must be members of the federal parliament, comprising a senate and house of representatives. The senate consists of at least six members from each of the original states, elected for six years, one-half of whom are renewed every three years; while the house of representatives consists of approximately twice as many members as there are senators, the representation being apportioned among the several states according to the population shown at the last census. The number in the house in 1928 was 76 and in the senate 36. The Governor-General in 1928 was Baron Stonehaven of Ury, and the ministry was as follows: Prime Minister, Minister for External Affairs, and Minister for Health, Stanley M. Bruce; Treasurer, Dr. E. C. G. Page; Home and Territories, C. W. C. Marr; Attorney-General, J. G. Latham; Postmaster-General, W. G. Gibson; Trade and Customs, H. E. Pratten; Works and Railways, W. C. Hill; Defense, Sir T. W. Glasgow; Repatriation, Sir N. R. Howse; Vice President of the Executive Council, Sir G. F. Pearce; Markets and Migration, T. Paterson; Honorary Ministers, T. W. Crawford and A. J. McLachlan.

HISTORY. Australia passed a comparatively uneventful and fairly prosperous year. Prime Minister Bruce strengthened his political fences by cementing the friendships between his Nationalist party and the Country party under the leadership of Dr. Page, which had one common end in the suppression of the Labor party and the prevention of its rise to power in the Commonwealth Government as it had done in the various state governments. It was only a coalition between the Nationalist and Country parties that permitted the Bruce government to retain power after the elections of 1925. Perhaps Premier Bruce had in mind the many labor difficulties

business was such that it was feared that Australia would take a long time to emerge from the serious depression which she had been in since 1926.

On October 9, the central Parliament was dissolved and a general election was called for November 17. The chief issue of the campaign, which was very hotly contested, was the question of arbitration, compulsory or otherwise, in industrial disputes. The Nationalist-Country party coalition hoped to strengthen their cause by showing the people that the shipping strike mentioned above had caused untold damages and might have been prevented had the strikers made use of the machinery established by the Government for arbitration. The Labor party advocated the repeal of the measures that Premier Bruce stood for and advocated, as well as the establishment of a protective tariff and the strengthening of the central Government at the expense of the states. The result of the election was favorable to the coalition government, although Labor made a gain of nine seats and the coalition lost a similar number. The Bruce government now controlled 43 votes as against 52 in the previous Parliament and the labor opposition controlled 32 as against 23. Premier Bruce made several changes in the membership of his cabinet. (See also EXPLORATION.)

AUSTRIA. A republic of central Europe, proclaimed Nov. 12, 1918, after the revolution following the World War; boundaries defined by the Treaty of St. Germain, signed Sept. 19, 1919. It consists of the following nine provinces; the City of Vienna, Lower Austria, Upper Austria, Salzburg, Styria, Carinthia, Tirol, Vorarlberg, and Burgenland.

AREA AND POPULATION. According to the census of Mar. 7, 1923, the total area was 32,369 square miles and the population, 6,534,481, giving a density of 202 persons to the square mile. The area of the Austrian provinces before the World War was 39,012 square miles and the population, according to the census of 1910, 7,529,935. According to the 1923 census, the City of Vienna, which constitutes a province, had a population of 1,865,780, making up 28.55 per cent of the total number of inhabitants. The other chief cities with their populations on Mar.

7, 1923, were: Graz, 152,706; Linz, 102,081; Innsbruck, 56,401; Salzburg, 37,856; Wiener Neustadt, 36,956; St. Pölten, 31,619; Klagenfurt, 27,423; Steyr, 22,111; Mödling, 18,677; Villach, 22,070; Wels, 16,412; and Baden, 22,217. The movement of population in 1926 was: Births 118,939; deaths, 94,081; marriages, 45,877; divorces (excluding Burgenland), 5350. The number of emigrants in 1926 was 3895.

EDUCATION. Primary education is compulsory between the ages of 6 and 14, but exemptions are easily obtained for children of the age of 12 and over. The cost of elementary instruction is borne chiefly by the communes and provinces. In 1925 there were in the Republic 5252 public and private elementary schools, with 29,125 teachers and 717,571 pupils. Secondary education is provided by gymnasia, realschulen, middle schools, and middle schools for girls. In 1925 there were 145 secondary schools of all types with 3593 teachers and 44,513 pupils. There are three universities maintained by the state, namely, Vienna, which had 824 teachers and 9511 students in 1925; Graz, 276 teachers and 2347 students; and Innsbruck, 195 teachers and 1567 students. There were also in the same year two technical high schools at Vienna; 37 training colleges for teachers; one theological high school; high schools for agriculture, mining, art, and music; and 12 theological colleges, of which 10 were for Roman Catholics.

PRODUCTION. Agriculture continues to be the principal occupation of the people. The total acreage sown in 1926 amounted to 4,766,708 acres. Of this total, 2,105,479 were in Lower Austria and 1,036,679 in Upper Austria. The principal crops with their acreage and yield in metric tons in 1926 were: Wheat, 500,334 acres, 256,864 tons; rye, 972,272 acres, 475,315 tons; barley, 362,352 acres, 197,555 tons; oats, 777,042 acres, 434,796 tons; potatoes, 439,043 acres, 1,297,782 tons; turnips, 128,596 acres, 1,202,449 tons. Although Austria is chiefly agricultural, the foodstuffs produced are not sufficient to meet the needs of the population. The production of raw sugar in 1925-26 was 78,145 metric tons. The latest livestock census showed 282,651 horses, 1,074,864 cows, 302,103 oxen, 68,143 bulls, and 717,236 calves.

Notwithstanding Austria was deprived of many of her mineral resources as a result of the World War, she still possesses minerals of considerable value. The production of lignite in 1926 was 2,957,700 tons and of anthracite, 157,300 tons. The output of iron ore was 1,094,400 tons in 1926, and of pig iron, 331,635 tons. Some copper, zinc, lead, and salt (76,768 tons in 1926) are also produced. Piano making, the manufacture of automobiles, furniture, and textiles represent the only industries of any importance. The nine factories of the Austrian tobacco monopoly in 1926 made 218,357,000 cigars, 4,568,362,000 cigarettes, and 48,967 metric quintals of smoking tobacco.

COMMERCE. The foreign trade of Austria in 1927 amounted to 5,180,000,000 schillings, of which 3,141,000,000 represented imports and 2,039,000,000 exports. The principal imports in 1926 were: Grain, flour, and rice (857,400 tons); coal and fuel (5,188,121 tons); wines (7,028,472 gallons); stone and building material (173,203 tons); raw cotton (29,935 tons); rubber (2272 tons); glass (15,381 tons); iron goods (41,744 tons). The principal exports were tim-

ber (1,502,535 tons); ores (77,426 tons); fruit (11,695 tons); sugar beet (7360 tons); furniture (25,651 tons); chemicals (39,970 tons). Austria is one of those countries which may normally be expected to show a trade deficit and yet maintain its economic equilibrium by other foreign income sufficient to offset its excess of imports over exports to some extent. It has been stated that a large part of the industries of the former Austro-Hungarian Empire are still owned in Austria and pay dividends to Vienna. The recovery of Vienna as a financial and commercial centre contributes important foreign revenue for services rendered. To this may be added the earnings on transit traffic, tourist trade, and remittances from Austrians abroad.

FINANCE. Total expenditures foreseen for 1928 amounted to 1,786,522,000 schillings, with total revenues of 1,630,977,000 schillings, leaving a deficit slightly over 155,000,000 schillings. Expenditures, however, include a sum of 191,120,000 schillings for capital investment, such as railway electrification, telephone-cable laying, road building, etc. Excluding investment items, the 1928 budget would show a surplus of approximately 35,600,000 schillings. As in 1927, in budgeting the state enterprises, the Government resorted to gross figures. The operating budget of the state railways is not included in the Federal budget, and the expenditures which appear on account of the railways are largely for capital purposes.

AUSTRIAN BUDGET PROPOSALS FOR 1928
(In thousands of schillings, each exchanging at \$0.1406)

Item	Actual, 1926	Estimated, 1927	Proposed, 1928
Expenditures			
Federal administration	1,015,704	1,073,539	1,144,054
Government monopolies	6,893	201,630	209,371
Government enterprises	47,418	327,624	338,404
State railways	108,348	105,608	94,693
Total	1,177,863	1,708,401	1,786,522
Revenues			
Federal administration	939,979	919,523	965,769
Government monopolies	199,740	390,130	408,870
Government enterprises	5,521	241,584	256,838
State railways	206	115	5
Total	1,145,446	1,551,302	1,630,977

In the budget of the Federal Administration proper, the expenditure for 1928, as compared with the budget estimates in 1927, showed an increase of 70,500,000 schillings, or 7 per cent; the estimated increase in revenue was 46,250,000 schillings, or 5 per cent. Of the total expenditure in this group, 203,000,000 schillings (18 per cent) were devoted to pensions, and 269,000,000 schillings (23 per cent) to social administration, principally unemployment doles, making a total of 472,000,000 schillings of unproductive expenditures that represent 41 per cent of the total expenditures of the Federal Administration. Expenditures on account of the national debt were estimated at 165,000,000 schillings, or 14.5 per cent of the total. Expenditures for military purposes increased from 79,700,000 to 88,600,000 schillings and constituted almost 8 per cent of the total expenditures.

Revenue from taxation was estimated at 679,000,000 schillings, as against 646,000,000 in 1927; while this figure is still below the 717,000,000 schillings actually collected in 1926, it should be remembered that it seems to be a matter of

policy with the Austrian Government to greatly underestimate its revenues. The budget estimates for the government enterprises showed a proposed deficit of 82,000,000 schillings. Of this sum, 75,300,000 schillings represented the net cost to the government of the postal and telegraph services.

COMMUNICATIONS. The Austrian Federal Railways, according to the official report for 1927, had a fairly successful year despite the economic difficulties which continue to beset the country. The length of the Austrian Federal Railways at the close of 1927 totaled 4863 kilometers, of which 1479 kilometers were double track. In addition, the Federal Railways were operating 944 kilometers of track for the account of private owners. Operating revenues during the year amounted to \$85,300,000 (\$82,100,000 in 1926) and operating expenses to \$78,600,000 (\$77,700,000 in 1926).

The rolling stock in operation at the close of the year comprised 2663 locomotives, 5460 passenger cars, 30,298 freight cars, and 1715 service and mail cars. The condition of the rolling stock depreciated greatly during the War and shortage of funds has made it impossible for the administration to restore it to efficient normal conditions. At the close of 1927 the management of the Federal Railways announced that it had decided to postpone indefinitely all electrification work for which definite commitments had not been made. (Consult preceding YEAR BOOK.) This decision had been subject to much criticism in government circles, as well as in the electrical industry, but up to the close of 1928 the administration had persevered in its policy of relinquishing its former schemes of electrification, nor did it appear likely that this policy would suffer any radical change in the near future. At the end of 1927, 593 kilometers of the state railways had been electrified, as compared with 474 kilometers at the end of 1926.

GOVERNMENT. According to the provisions of the constitution which went into operation on Nov. 10, 1920, Austria was declared to be a federal republic, composed of eight provinces and the city of Vienna. A president is chosen for four years by both houses of the legislature. He may not be reelected more than once. The legislature is bicameral, comprising an assembly (Nationalrat) and a first chamber (Bundesrat). The powers of the latter are advisory. At the elections held on April 24, 1927, the following parties were returned: Christian Socialists, 73; Social Democrats, 71; German Nationalists, 12; Peasants' party, 9. President in 1928, Dr. Michael Hainisch (elected in 1920, reelected in 1924). The ministry as formed on May 19, 1927, was composed as follows: Chancellor and Minister of Foreign Affairs, Dr. Ignaz Seipel (Christian Socialist); Vice Chancellor, Karl Hartleb (Peasants' party); Justice, Dr. Franz Dinghofer (Pan German); Social Welfare, Dr. Joseph Resch (Christian Socialist); Agriculture and Forestry, Andreas Thaler; Finance, Dr. Victor Kienböck; Commerce and Communications, Dr. Hans Schuerff; Education, Dr. Richard Schmitz; Defense, Karl Vaugoin.

HISTORY

Probably the outstanding development in Austrian history was the great decline in the strength of the Socialists, with the consequent increase in strength of the Clericals and the middle classes.

As noted in the preceding YEAR BOOK, a bloody

struggle occurred in July, 1927, which was virtually a revolt against the Seipel government. From that time on the power of the Socialists began to diminish, and at the close of 1928 it was confidently expected in many quarters that the year 1929 would see the passing of the remaining elements of Socialist strength, such as the rent laws. An outgrowth of the riotous summer of 1927 was the creation of a bourgeois private army, aimed primarily at the socialists' armed forces that paraded the streets of Vienna at will.

The struggle between the Clericals and the Socialists went on apace, however, although the Socialists were indubitably losing ground. Charges and countercharges were hurled at each group by the other and many times in the course of the year and some of the meetings of Parliament resembled real old-fashioned street brawls. In February, the Socialists exercised their constitutional rights and compelled the ministry to call a special session of Parliament. At this meeting the Socialists charged that the Government was using the newly formed bourgeois private army to coerce the Socialists to carry out the will of the Government. The lie was passed freely between the two groups and it was necessary to adjourn the meeting to prevent physical combat. At a local election in Vienna held early in March, the declining strength of the Socialists was further indicated when they failed to elect police commissioners.

THE TYROL QUESTION AGAIN. In the early part of the year the old question of the protection of the German minorities in Tyrol came to the fore again and resulted in extensive comment in the press of Austria and Italy, but nothing constructive was actually done to relieve the situation. On February 23, considerable time was devoted to the problem in the Austrian Parliament for the first time. Although the Tyrolese had complained long and bitterly because of the obvious attempts on the part of Italy to Italianize Tyrol, the Austrian Government had failed to take any notice of conditions there officially. On the above mentioned date, however, the matter was put before the Parliament in vigorous terms by Deputy Kolb, a member of Chancellor Seipel's own party. Kolb described in ringing terms the various restrictive policies undertaken by Italy with regard to citizenship, German associations, and freedom of speech and press. Chancellor Seipel himself, in a speech which was praised throughout Austria and in Central Europe in general, expressed his sincere feelings for the plight of his countrymen who were being ground under the heels of Mussolini. He claimed that Austria had no desire to interfere in the internal problems of a neighboring country, but that freedom of speech, which Austria believes in and practices, permitted the discussion of such problems in an orderly fashion and before a duly elected assembly. While deprecating the fact that his country could not appeal to Italy directly or to the League of Nations, he felt that the entire matter was before a higher tribunal than either of these, that is, the conscience of the world.

As was to be expected, Mussolini made one of his usual replies to any attack on Fascism. He categorically denied the Austrian charges and went on to show what Italy had done in a material way for the people and country of Tyrol. He was roundly applauded by his hearers, particularly when he greeted the suggestion that the League of Nations should investigate the

question of minorities with something closely akin to contempt for the League. He stated that this was the last time he would ever mention the question, but he wanted the Tyrolese, the Austrians, and the entire world to know that the Brenner Pass was a necessary safeguard for Italy and as such she was willing to defend it to her last drop of blood. He intimated that deeds would take the place of words in the future, commenting indirectly on the strength of Italy and the weakness of Austria.

The Austrian press reported Mussolini's speech with scarcely any comment. Diplomatic relations, however, became very strained with the result that the Italian ambassador at Vienna took his leave from that city for almost four months. The matter was virtually settled for the time being when Chancellor Seipel admitted to Mussolini that he was not interested in the political but merely in the cultural aspects of the situation. Needless to say, Chancellor Seipel was bitterly attacked both in Austria and Tyrol for his surrender to Mussolini's mailed fist. At the close of the year, the Tyrol question, although still a matter for diplomatic discussion, seemed destined to remain one of the sore spots of Europe, one which might rival the Balkans as being the "tinder box" of Europe.

UNION WITH GERMANY. "Anschluss," as the movement for a union between Austria and Germany was styled, was very much to the front during 1928, and seemed to be gathering momentum. Practically every shade of Austrian opinion seemed to be open to propaganda for a Teutonic union, even the extreme Catholics seeming to favor the scheme. The greatest manifestation of Anschluss occurred in the summer during the meeting of the Congress of Singing Societies, which gathered at Vienna presumably to celebrate the anniversary of Franz Schubert. The gathering of so many peoples from Germany and Austria was made the occasion for bringing Anschluss to the attention of the entire country. The speakers decried the movement as a political one, which is the typical French attitude toward it, and reiterated that it was purely cultural and fast becoming a fact even though no official recognition of it was being taken by either government. Dr. Seipel had taken a stand in opposition to such a union, but it was also a well-known fact that he would not enter into any economic agreement with any of the succession states which does not include Germany.

THE OCTOBER RIOTS. A repetition of the July, 1927, riots was narrowly averted in October, when on the seventh of that month the Socialists and bourgeois army came into near conflict at Wiener Neustadt, a city about 30 miles from Vienna and long known as a Socialist stronghold. The Socialists had made all arrangements to hold a parade, when it became known that the Heimwehr, as the bourgeois armed forces are called, planned to hold a parade in the same city at the same time. Many thought that this was merely a show of force on the part of the anti-Socialists and an indication of what would occur if the Socialists attempted to control the city of Vienna in the future by show of arms.

The announcements of the rival parades were out in time to allow the citizens of the city to make such provisions as they could against damage to private property. Shops were closed

and business was at a standstill. When the day came, the Federal Government sent 10,000 troops armed to the teeth with every known method of fighting rioting. These troops patrolled the streets so effectively, that although both the Socialists and the Heimwehr paraded, no fighting and consequently no casualties occurred. The only tangible result of the demonstration was a meeting of leaders of various political parties to consider the question of disarming political organizations.

THE ELECTION OF A PRESIDENT. According to the Austrian constitution, a president of the Republic is only eligible for reelection once. The first President, Dr. Michael Hainisch, was elected in December, 1920, and was reelected in December, 1924. Naturally his term of office expired in December, 1928, and the question of a successor was a pressing one, particularly when one considers the feeling between the Socialists and the Clerical party. Dr. Seipel, the Chancellor and leader of the Clerical party, suggested that the constitution be amended so as to permit Dr. Hainisch to be elected again. The Socialists opposed this on the grounds that it would create a dangerous precedent and might even lead the way to a dictatorship. They even hinted that Dr. Seipel had the latter idea in mind and if the constitution were amended might become a candidate for the presidency himself.

When the Socialists remained obdurate, Dr. Seipel cast his strength in favor of the candidacy of Wilhelm Miklas, president of the National Assembly and a member of his own party. Herr Miklas was elected on the third ballot, the first two failing to give a majority. The Socialists, who were supporting Karl Renner, cast blank ballots, when the third vote was taken. The new President was 56 years old and was an educator before entering politics. He had presided over the National Assembly since 1923. In most quarters he was looked upon as an opponent of Anschluss, but he was a very available candidate because he had made very few political friends. Before the balloting, Dr. Seipel attempted to have Dr. Hainisch elected for a term of one year, during which time a consideration of the constitution would be taken up with a view to broadening the powers of the President as well as permitting him to be elected by the people instead of by Parliament. This proposal was defeated by the assembly, but it was expected that some changes would be made even if the Chancellor had to make concessions to the Socialists to gain the two-thirds majority which was necessary to amend the constitution.

AUTHORS' LEAGUE OF AMERICA. A national organization of authors, artists, dramatists, and screen writers; founded and incorporated in 1912, for the purpose of: procuring adequate copyright legislation, both international and domestic; protecting the rights and property of all those who create copyrightable material; advising all such in the disposal of their productions and obtaining for them prompt remuneration therefor; disseminating information among them as to their just rights and remedies. The League supplies to its members confidential information relating to publishers, theatrical and motion-picture producers, art buyers, and other persons and companies engaged in the purchase, sale, publication, or production of copyrightable material. The League is divided into four de-

partments or guilds; the American Dramatists, the Authors' Guild, the Guild of Free Lance Artists, and the Screen Writers' Guild. The officers for 1928 were: President, Owen Davis; vice president, Arthur Train; secretary and treasurer, Louise Silcox. The headquarters of the League are at 2 East 23rd Street.

AUTOGYRO. See **AERONAUTICS.**

AUTOMOBILE RACING. Louis Meyers of Redlands, Calif., won the highest rating among the automobile racing drivers in 1928. The annual 500-mile classic at the Indianapolis Speedway, which was witnessed by 150,000 persons, was won by Meyers who covered the distance in 5 hr., 01 min., 33.75 sec., averaging 99.482 miles per hour. Ray Keech of Philadelphia ranked next to Meyers in successful competition, winning the 100-mile race at Syracuse, N. Y., and the 185-mile contest at the Rockingham Speedway, Salem, N. H., as well as the Atlantic City Speedway race over a 100-mile course.

Captain Malcolm Campbell, famed English driver, lowered the world record for a mile at Daytona Beach, Fla., traveling at the rate of 206.95602 miles an hour. In attempting to better this record Frank Lockhart was killed at the same place. Keech, however, improved Campbell's mark at Daytona Beach, his time being 207.5526 miles an hour. In addition to Lockhart, Fred Comer, another driver, was killed at the Salem, N. H., track and Norman K. Batten and Earl DeVore lost their lives when the Vestris sank off the Atlantic coast.

AUTOMOBILES. In 1928 American automobile production again established a new record. The total production of cars and trucks in the United States and Canada was 4,630,000, or nearly 30 per cent more than that in 1927 (3,573,671) and nearly 3 per cent greater than the best previous year, 1926, when it was 4,503,531. The year was eventful on the business side of the industry, opening as it did with Ford still preparing for production of the new Model A, and speculation rife as to whether it would get into production soon enough to compete with its rivals in the lowest-price class. Throughout the first half of the year production was small for Ford, but in the latter half was speeded up so that the year closed with considerably more than half a million of the new models sold.

Many important developments in the way of new models came toward the close of the year. One of the most interesting was the introduction of the six-cylinder Chevrolet, displacing the four and selling at practically the same price, revealing the direction in which the General Motors Corporation was proposing to combat Ford competition. This also meant the entire abandonment of the four-cylinder field by General Motors, as it was building only sixes and eights.

Earlier in the year the new Buick was presented in an entirely new body design and radically improved mechanically. Later came the new "400" series of the Nash and finally many other new models were announced just before the opening of the National Automobile Show in January at New York.

Pierce-Arrow made its debut in the eight-cylinder field. Packard discontinued its six-cylinder line and produced only eights. Hudson and Essex remained in the six-cylinder fold but have been greatly improved mechanically and reduced

in price. A number of the new lines offered considerably more at lower figures than ever before.

Characteristic of all the new models was greater attention to eye appeal in body lines and color. Practically all lines showed some mechanical improvements as well, although mainly in the nature of refinements rather than radically new features. Two more cars had four forward-speed transmissions, the Durant and the Stutz. The Graham-Paige had introduced this feature the year before. The Willys-Knight and Whippet cars featured a new finger-tip control of the horn, lighting, and starter from one button on the top of the steering column.

New models as a whole reflected efforts toward greater comfort and convenience for driver and passengers. Easier gear shifting, simplified chassis lubrication, quicker "pick-up" through more power and less tiring steering and braking controls were generally evident. Four-wheel brakes were universally supplied, the last of the two-wheel-brake cars having changed to the four-wheel type. In means of operation as between the mechanical and hydraulic types, adherents to one or the other form were about equally divided and it remained to be seen which if either of these types would ultimately predominate.

In the effecting of easier riding qualities, there had been marked improvement in spring suspensions, the provision of shock absorbers as standard equipment on almost all cars except a very few lower-priced lines, better weight distribution, wider and more comfortable seats—all to overcome jars and bumps from the road. To reduce vibration from the motive parts, there was more use of rubber insulators in engine and other mountings, better engine counterbalance, vibration dampeners, lighter reciprocating parts and quieter gearing.

STATISTICS. Toward the close of 1928 the usual statement from the National Automobile Chamber of Commerce of preliminary facts and figures of the automobile industry gave the information from which the following is taken:

Of the total production in the United States and Canada in 1928 before mentioned, 4,630,000, passenger cars represented 4,044,000 and motor trucks 586,000. Of the passenger cars 3,441,600, or 85 per cent, were closed models. This is a reversal of the situation in nine years, for only 17 per cent of the cars produced in 1920 were closed. The wholesale value of the vehicles produced during the year was \$3,045,820,000, made up of \$2,630,500,000 for passenger cars, or 86 per cent, and \$415,320,000 for trucks. The average retail price of cars was \$876 and of trucks, \$950.

Tire manufacturers in the United States produced in 1928, 78,500,000 tires. The wholesale value of tires sold for replacement was \$670,000,000. The wholesale value of parts and accessories for replacement and of service equipment sold totaled \$950,000,000.

The number of motor vehicles in use throughout the world in 1928 was computed to be 31,725,000. Registration in the United States accounted for 24,750,000, or 78 per cent, of which 21,630,000 were passenger cars and 3,120,000 motor trucks. The gain in motor-vehicle registration in the United States over the previous year was 7 per cent. Nearly a quarter of these vehicles, or 5,450,000, were owned by farmers.

The United States had 3,013,584 miles of highways about a fifth of which, 615,000 miles, was surfaced.

During the year 1928 the making, selling, and repairing of motor vehicles with allied lines gave employment to 4,110,000 persons. The Federal and State governments collected during the year taxes on motor vehicles amounting to \$785,386,000. This included motor-vehicle registrations, gasoline taxes, and excise taxes up to May 29, 1928, on which date these taxes were removed.

Purchasing out of income was being more and more recognized by bankers, writers on financial questions, and students of economics as a sound practice bringing within the reach of those of moderate means benefits they would not otherwise enjoy and stimulating business for the producers of utilities. In this connection it is interesting to observe that 58 per cent of new cars were sold on time with an average note at time of purchase of \$606 and 52 per cent of new trucks with purchase notes averaging \$832. Used cars also were largely bought on time with an average purchase note of \$295.

Something of what the automobile industry means to other lines of business is shown by the following figures: The railroads in 1928 handled 3,600,000 carloads of automobile freight. Of all rubber consumed in the United States, 85 per cent was used by the automobile industry. Likewise 60 per cent of all plate glass produced, 12 per cent of the copper and 15 per cent of the iron and steel were consumed by the automobile industry, and 80 per cent of the gasoline production was used by motor vehicles. The latter amounted to 10,860,000,000 gallons and motor oil consumption to 434,000,000 gallons. The crude rubber used by the American motor industry in 1928 was 814,000,000 pounds and for tires the cotton fabric used was 299,500,000 pounds.

The 3,120,000 motor trucks in use were in the hands of some 2,271,000 owners indicating what a part was played in transportation of goods by this agency. Fifty-nine railroads were using trucks as part of their shipping service. The growing use of motor busses for passenger transportation, both short and long haul, was striking. In 1928 their registration had reached 92,000. Busses were taking an important place in extending the advantages of better education in the rural communities as shown by the fact that 14,850 consolidated schools were using them. In extending their services to points not reached by rails, 365 street railways were using 9900 motor busses; 67 steam railroads were using 1250. For competition with railways, see RAILWAYS.

By far the most spectacular progress in the automobile industry in recent years was shown in the increased participation in foreign markets. In 1928, including United States exports and the Canadian output, which was entirely of United States models, the number of motor vehicles sold outside of the United States was 810,000. This was 17.5 per cent of the total produced and an increase in foreign sales over 1927 of 26 per cent. Exclusive of Canadian production and foreign assemblies of motor vehicles of United States design, exports of motor vehicles from the United States had more than doubled in the past four years. The value of motor vehicles, parts, and tires sold outside of the United States in 1928 was \$680,600,000. Compared to exportation, importation was in-

significant, the number of foreign motor vehicles purchased in the United States being only 520.

What the motor-vehicle retail business amounted to in numbers of units is strikingly indicated by the following figures: The total number of car and truck dealers as nearly as it could be determined was 53,700. The public garages numbered 51,600. Service stations and repair shops totaled 95,400, and supply stores, 79,100. The gasoline business was a considerable factor in itself, the number of gasoline filling stations being estimated to be 317,000 and the number of gasoline pumps in use 604,000.

LEGISLATION. Some quite important developments occurred during the year in the matter of legislation as related to the use of vehicles. Most significant of these was the completion of a Model Municipal Traffic Ordinance by the National Conference on Street and Highway Safety in which ten associations vitally interested coöperated with the Department of Commerce at the instance of Secretary Hoover. This supplemented the Uniform Vehicle Code proposed by the same body two years before and recommended for adoption by State legislatures. More rapid adoption of the uniform code was anticipated in 1929 when 43 State legislatures would be in session. Both were aimed to correct the inconvenience and even danger arising out of the present variation in State laws and city regulations that were so confusing to drivers of automobile traveling from one State into another. See **ROADS AND PAVEMENTS**.

The unfavorable experience of Massachusetts with a compulsory liability insurance law did much to turn the tide of sentiment against such legislation. Dealers and automobile clubs were opposing it and it was improbable that complete compulsory liability insurance would be enacted into law by other States. Drivers' license laws, one of the strong features of the Uniform Vehicle Code, were growing in favor as being in the interest of safety and several States were likely to adopt them. See also **INSURANCE**.

Especially interesting was the change of front on the part of law-makers on the question of speed regulation. Several States had raised their speed limits apparently becoming more concerned over those who drive too slow than over those who drive too fast, because of increasing difficulty in coping with congestion on their highways. Four-wheel brakes with their quicker stopping ability were coming so generally into use that it was held that faster speeds were permissible with no sacrifice of safety. The same influence, desire to increase highway capacity as well as to preserve the roads, was having its bearing on the requirement of pneumatic instead of solid tires on heavy duty trucks. This was being voluntarily accomplished so rapidly that it was felt laws need not be urged.

In the field of Federal legislation considerable thought and discussion were given to some equitable way to regulate busses operating in interstate commerce. Several bills were before the last 1928 session of Congress, but as there was no general agreement among interested parties as to what should be the character of such legislation no definite action was taken.

See also **MILITARY PROGRESS**.

AVIATION. See **AERONAUTICS**.

AVIATION, NAVAL. See **NAVAL PROGRESS**.

AYSCOUGH, JOHN. See **BICKERSTAFFE-DREW, F.B.D.**

AZERBAIJAN, a'zër-bi-jan'. A new state constituted in 1918, consisting chiefly of the two former Russian provinces of Baku and Yelisavetpol; bounded on the east by the Caspian Sea, on the west by Georgia and Armenia, on the south by Persia, and on the north by Georgia, Northern Caucasus, and Daghestan. The official name of the state is the Azerbaijan Socialist Soviet Republic. Area, about 32,950 square miles and the population, according to official Russian figures, in 1926, 2,313,172 of whom 75 per cent are Moslem. Baku, the centre of the petroleum industry, is the capital and has a population of approximately 447,000. In 1925-26, 134,855 pupils attended primary and secondary schools. There were also trade-technical schools; teachers' training centres, higher educational institutions, and workers' faculties. The oil industry, in 1926-27, had an estimated production of 625,500,000 poods. After the outbreak of the Russian Revolution in 1917, Azerbaijan, Armenia, and Georgia formed a federation, but this broke up after a few weeks, when the three constituent elements each declared its independence. Two months after the *de facto* independence of Azerbaijan was recognized by Great Britain in 1920, the Bolsheviks overthrew the government and thenceforth the government was under Soviet control.

BADEN, bā'den. A constituent state of the German Republic, with a republican form of government since Nov. 22, 1918; formerly a grand duchy in the German Empire; bounded by Bavaria on the east and Alsace-Lorraine and the Palatinate on the west. Area, 5819 square miles; population in 1925, 2,312,462, as compared with 2,195,580 in 1919. Capital, Karlsruhe, with 145,694 inhabitants in 1925. The largest city is Mannheim with 247,486 inhabitants in 1925. Of the total population of the state in 1925, 1,115,477 were males and 1,196,985 females. The majority of the population is Roman Catholic. Education is free, general, and compulsory, the schools being under the jurisdiction of the state. For higher education there are universities at Heidelberg and Freiburg. In 1926 the total area under cultivation was 2,098,142 acres. Among the agricultural products, oats, rye, barley, wheat, potatoes, and vegetables are the most important. In 1925, 30,755 acres were planted to the vine and the yield of wine was 6,488,232 gallons. In 1927, 12,522 acres were under tobacco. In 1926 there were 622,324 cattle, 486,601 pigs, 44,836 sheep, 149,367 goats, 69,459 horses. The budget for 1928 and 1929 fixed the ordinary revenue at 275,800,000 gold marks and the ordinary expenditure at 281,200,000 gold marks.

The present constitution dates from Mar. 21, 1919, and vests the executive power in a cabinet comprising the state president, five ministers, and three state councilors without portfolios, all of whom are elected by the legislature. Legislative power resides in a single chamber body known as the Landtag. The constitution abolishes all privileges of birth and religion and under it women are endowed with the same rights as the men, being eligible to all public offices. There is universal suffrage for all persons of either sex over 20 years of age. The initiative, referendum, and proportional representation have been introduced. The Landtag elected on Oct. 25, 1925, for the term ending Oct. 25, 1929, had 72 members distributed among the several parties at the beginning of 1927 as follows: Centre, 28; Socialists, 16; German Democratic party,

6; Right, 9; German People's party, 7; Communists, 4; Economic Union, 2. State President at the beginning of 1928, G. Trunk, who also held the post of Minister of Justice. Dr. F. J. Schmitt was Minister of Finance, A. Remmele, Minister of the Interior, and O. Leers, Minister of Religion and Education.

BAGDAD. See **ARCHÆOLOGY**.

BAHAMAS. A group of islands, north of the British West Indies, off the southeast coast of Florida, 29 in number, of which 20 are inhabited. They also include 661 keys and over 3000 reefs. The islands, which are of coral formation, have an area of 4404 square miles and a population, according to the census of 1921, of 53,031. The estimated population on Jan. 1, 1927, was 58,101. The important islands with their populations in 1921, are as follows: New Providence, containing the capital, Nassau, 12,975; Andros, 6976; Eleuthera, 6048; Long Island, 4659; Abaco, 3993; Exuma, 3730; San Salvador, 4273. Elementary instruction is compulsory from the ages of 6 to 14. For the calendar year 1926, the exports totaled £406,271, and the imports, £2,059,755. The principal exports were sisal, sponge, lumber, tomatoes, shells, and preserved pineapples; principal imports, foodstuffs, spirits, raw materials, and manufactured articles. In 1925-26 the revenue was £502,216 and the expenditure, £374,176. The public debt in 1926 was £151,123. Ship entries in 1926, 1159 vessels of 539,786 tons: clearances, 984 vessels of 528,559 tons. The islands are administered by a governor who is assisted by an executive council and a legislative council, each of nine members and a legislative assembly of 29 members, the franchise being based on a small property qualification. Governor and Commander-in-chief in 1928, Maj. Charles William Orr.

BAKHMETEFF, bāk'mēt'ef, GEORGE S. Former Ambassador of Russia to the United States, died at Paris on August 29. His first diplomatic post was that of an attaché in London. Later he served as secretary in Paris, Athens, and Washington. He distinguished himself while an envoy to Bulgaria, by dissuading King Ferdinand from attacking the Turks in Macedonia. In 1905 he was sent to Japan and succeeded in alleviating the hostility aroused by the Russo-Japanese War. That accomplished, the popular Ambassador returned to Washington in 1911, where he remained until 1917, when he resigned his last official post in consequence of the Revolution.

BAKU. See **AZERBAIJAN**.

BALDWIN, BIRD THOMAS. American psychologist and educator, died at Iowa City, Iowa, May 12, at the age of fifty-three. He was born at Marshallton, Pa., and studied at the University of Pennsylvania, Harvard University, and the University of Leipzig. After holding positions in pedagogy and psychology at various institutions, he became lecturer in educational psychology at Johns Hopkins University, Baltimore, Md., 1916-17, and research professor in educational psychology and director of the Iowa Child Welfare Research Station, State University of Iowa, in 1917. He was a major in the Sanitary Corps, U. S. A., 1918-19, and later chief psychologist and director of the rehabilitation of disabled soldiers at the Walter Reed General Hospital, Washington, D. C. He wrote: *Physical Growth and School Progress*; *Physical Growth from Birth to Maturity*; *The Mental Growth Curve of Normal and Superior Children*; *The Psychol-*

ogy of the Pre-school Child, besides many articles, bulletins, and reviews on educational and psychological topics.

BALKAN STATES. The collective term applied to those states which make up the Balkan peninsula in southeastern Europe north and west of the Aegean Sea. See ALBANIA, BULGARIA, GREECE, JUGO-SLAVIA, RUMANIA, and TURKEY.

BALTIMORE. For restoration of Fort McHenry, see CELEBRATIONS.

BALTZELL, WINTON JAMES. American writer on music and editor, died at New York, January 10. He was born at Shiremanstown, Pa., Dec. 18, 1864, and was educated at Lebanon Valley College, the New England Conservatory of Music, and the Music School of the University of Pennsylvania. From 1890 to 1897 he taught at Reading, Pa., and in the latter year became editor of *The Etude*. In 1899-1900 he taught the history and theory of music at Ohio Wesleyan University, and then returned to *The Etude*, until 1907. He was editor of *The Musician*, 1907-19, and secretary of the National Academy of Music from 1919. He wrote: *A Complete History of Music* (1905); *Baltzell's Dictionary of Musicians* (1911), and textbooks on the theory and history of music.

BANG, MRS. NINA. Danish stateswoman, died March 25. She was born at Copenhagen, Denmark, in October, 1866. She obtained a degree in history in 1894. She was a student of economics, and wrote much on that subject. In political belief Mrs. Bang was a Socialist. From 1913 to 1917 she was a member of the Copenhagen city council, and in 1918 she was elected to the Landsting, the upper house of the Danish Legislature. In 1924 she became the first woman member of a Danish cabinet, as minister of education, and she held the portfolio until 1926. She attracted international attention by her determined opposition to the Danish national anthem, declaring that it was too warlike.

BANKERS' ASSOCIATION, AMERICAN. The dominant national organization of banks in the United States. It has a membership of over 20,000 banks, out of a total of 27,000 in the country, and comprises among its members, it is estimated, in excess of 90 per cent of the nation's aggregate banking capital funds of \$8,000,000,000 and total resources of \$69,000,000,000. The association has four major divisions, each devoted to the special interests, technical advancement, and general welfare of the respective classes of banks indicated in their titles, as follows: The National Bank Division; the Savings Bank Division; the State Bank Division; and the Trust Company Division. Within the organization there are also three sections devoted to general inter-bank interests as follows: The American Institute of Banking Section, which is the educational arm of the organization, with an enrollment of 38,000 students from banks in all parts of the country and a general membership of 63,000; the Clearing House Section, which promotes the organization of city and county bank groups for the purpose of facilitating business transactions and common welfare through clearing houses, clearing-house examiner systems, and mutual credit bureaus; and the State Secretaries Section, which forms a link between the national organization and the State. There is also a Protective Department which prosecutes continually a country-wide campaign of prevention, protection, and investigation for all member banks,

in respect to criminal operations against banks. The association conducts a legal department, which keeps bankers informed on developments in the field of banking law and watches the interests of banking and the public in both State and National legislation, in connection with the association's State and Federal legislative committees and councils, which seek to present the best banking viewpoints to the legislators.

During 1928 the organization gave special attention to maintaining equitable bank taxation and to the modernization of such taxation, and continued its extensive research into the causes of bank failures which resulted in the application of the finding that the remedy lay in larger minimum capital for banks, the granting of charters only where there was a real need for increased banking facilities, more drastic State supervision of banks, and the organization of group bank associations for mutual help.

The American Bankers' Association Educational Foundation completed its campaign in 1927 to raise a fund of \$500,000 to be employed in the furtherance of scholarships and research in banking and finance in college, and in 1928 allocated 167 loan scholarships in annual units of \$250 to students in colleges throughout the country. In addition, the Education Commission conducted lectures on banking and business in schools and civic clubs throughout the country.

Each autumn the association holds its annual convention, which draws up a statement of the organization's policies, and in the spring the executive council holds its meeting. The latter group is a representative body proportioned to the membership in all States and is qualified to take action upon certain association matters. The continuing activities of the association are carried on by a permanent staff, functioning in the national headquarters of the organization at 110 East 42nd Street, New York City, under the direction of the executive manager, Fred N. Shepherd. There is also an Administrative Committee, composed of 15 members including the national officers, heads of the various divisions and sections, and certain others, which stands as the ad interim governing authority between meetings of the convention and the executive council.

The problems which engaged the attention of the A. B. A. at its fifty-fourth annual convention which opened at Philadelphia on Oct. 1, 1928, were the credit situation, farm relief, proposed bank-tax legislation, the new system of small salary loans, crime, and, of special interest, the new regional clearing houses that have been evolved as a check on bank failures. The officers elected for 1928-29 were: Craig B. Hazelwood, Vice President Union Trust Company, Chicago, Ill., as president; John G. Lonsdale, President National Bank of Commerce, St. Louis, Mo., first vice president; Rome C. Stephenson, Vice President St. Joseph County Savings Bank, South Bend, Ind., second vice president; and W. D. Longyear, Vice President Security Trust & Savings Bank, Los Angeles, Calif., treasurer.

BANKS AND BANKING. As during the year 1927, credit expansion continued to be the dominating feature in the banking field, the year 1928 thus maintained the upward movement which had already gained such headway and in some quarters greatly exaggerated and developed it. There was an increase all around in the operations of the banks of every class,

and while there appeared to be a decidedly better solvency situation, as shown by a decline in the number of failures, fundamental alteration in asset conditions was such as to afford strong grounds for the belief that the banking system as a whole was decidedly weaker in so far as liquidity and general soundness was concerned, at the end of the year, than it was at the beginning. Nevertheless, the year was profitable and successful, from the earnings standpoint, while the great movement in value of bank stocks, although temporarily checked and suspended during the middle part of the year, was substantially maintained, recovering lost ground as the year drew to a close.

NATIONAL BANKS. The national banking system continued to show growth in assets but not in numbers, there being 7707 associations in existence at the close of the report year, or 125 less than a year earlier (Oct. 31, 1927). The aggregate resources of the banks were \$1,711,656,000, or a growth of about 6.3 per cent. Falling off in number was due to consolidations and retirements, accompanied by some failures, while it is probable that greater care than formerly was used in passing upon applications to organize new banks. Failures fell off about 60 per cent from the preceding year, there being 54 as compared with 135 in 1927. No new legislation of importance was enacted, but the development of the system continued under the National Bank Act as amended by the so-called McFadden Act of Feb. 25, 1927. Perhaps the most striking development of the year was seen in connection with the growth of the number of banks authorized to undertake trust company functions, this number being undoubtedly stimulated in its expansion as the result of the legislation of 1927. Prior to that year only 101 national banks had included the word "trust" in their titles, whereas since that time the number has gone to 236, and the total amount of trust assets held in National Bank Trust departments at the end of the year was about \$3,300,000,000.

Brief analysis of the condition of national banks is furnished by the accompanying table in which the chief assets and liabilities of the system are contrasted for a series of dates. From this showing the continuous growth of the operations of the system can be noted, and the expansion of deposits and of lending operations stands out conspicuously. For the report year 1928, the average dividend of national banks

(measured by capital and surplus) was approximately 7 per cent, and the total net addition to profits was \$270,158,000, or about \$18,000,000 more than for the preceding year.

FEDERAL RESERVE MEMBERS. The position of Federal Reserve member banks includes, as is well known, the facts as to a body of banks and trust companies which comprise not only the national banks themselves, but also about 1300 institutions organized under State charter. Inasmuch as this group of banks includes a large

ASSETS AND LIABILITIES OF 624 REPORTING MEMBER BANKS, TOGETHER WITH CHANGES DURING THE YEAR ENDED JANUARY 2, 1929

[In thousands, 000 omitted]

	Jan. 2, 1929	Increase or decrease during year
Loans and investments, total	\$23,338,211	+ \$1,280,905
Loans and discounts, total	16,962,625 ^a	+ 1,331,615
Secured by U. S. Government obligations	631,658	+ 353,196
Secured by stocks and bonds	7,553,386	+ 750,953
All other loans and discounts	9,279,644 ^a	+ 570,979
Investments, total	6,375,586 ^a	- 50,710
U. S. Government securities	2,974,117	+ 147,503
Other bonds, stocks, and securities	3,401,469 ^a	- 198,213
Reserve with Federal Reserve banks	1,859,100	+ 7,267
Cash in vault	293,947	- 1,874
Net demand deposits	14,040,845	- 165,363
Time deposits	6,993,321	+ 382,431
Government deposits	167,167	+ 2,998
Due from banks	1,399,557	+ 10,353
Due to banks	3,648,004	- 300,579
Borrowings from F. R. banks, total	930,376	+ 536,083
Secured by U. S. Government obligations	931,658	+ 353,196
All other	298,718	+ 182,887

^a December 26 figures, revised.

fraction of the entire body of assets of commercial banks, it affords a rather better reflection of actual changes in bank credit than can be obtained from the national figures alone. The weekly report obtained by the Federal Reserve Board from about 624 representative members, situated in 100 cities and probably including from 45 to 50 per cent of the entire assets of the banks of the country, is shown in the accompanying statement which illustrates their position as compared with the corresponding situation of a year previously.

CHANGES IN NATIONAL BANK POSITION
[In thousands of dollars]

	1924 June 30,	June 30, 1925	Per cent in- crease (+) or decrease (—) since June 30, 1924	June 30, 1926	Per cent in- crease (+) or decrease (—) since June 30, 1925
Demand deposits	9,593,250	10,430,254	+ 8.72	10,778,603	+ 3.34
Time deposits	5,259,933	5,924,658	+ 12.64	6,313,809	+ 6.57
Loans and discounts ^a	11,978,728	12,674,067	+ 5.80	13,417,674	+ 5.87
United States and other bonds, stocks, etc.	5,142,328	5,730,444	+ 11.44	5,842,253	+ 1.95
Lawful reserve with Federal Reserve banks	1,198,670	1,326,864	+ 10.69	1,381,171	+ 4.09
		June 30, 1927	Per cent in- crease (+) or decrease (—) since June 30, 1926	June 30, 1928	Per cent in- crease (+) or decrease (—) since June 30, 1927
Demand deposits		10,923,729	+ 1.35	11,003,795	+ 0.73
Time deposits		7,315,624	+ 15.87	8,296,638	+ 13.41
Loans and discounts ^a		13,955,696	+ 4.01	15,144,995	+ 8.52
United States and other bonds, stocks, etc.		6,393,218	+ 9.43	7,147,448	+ 11.80
Lawful reserve with Federal Reserve banks		1,406,052	+ 1.80	1,453,383	+ 3.37

^a Includes rediscounts and customers' liability under letters of credit.

Great increase in operations, and particularly in loans and discounts, is exhibited by this statement, the enlargement amounting to \$1,331,000,000 while the increase in deposits was \$218,000,000. As the end of the year approached, banks of all classes became very fully "loaned up," and more than ever dependent upon Federal Reserve banks, with the result that increases in credit extension were very promptly paralleled by corresponding increases (in due proportion) in the loan accounts of Federal Reserve banks.

The position of State banks and trust companies ran substantially parallel to that of national banks during the year. In the annual compilation made by the comptroller of the currency as of June 30, 1928, demand deposits of 18,522 State banks and trust companies, savings banks and private banks, totaled \$13,302,856,000; and time deposits of the same group, \$20,241,471,000. Savings deposits in mutual savings banks were \$8,665,592,000 and in stock savings banks, \$1,338,011,000. The grand total of deposits of all classes was given as \$33,944,265,000, while national banks reported \$19,300,433,000, an aggregate of \$53,244,698,000.

A review of the statement shows the continuation of the same general tendencies that have been at work in recent years, and the progressive enlargement of business on the part of the several classes of non-national institutions. As already noted, the larger of these non-national institutions are included in the statement of member banks of the Federal Reserve System.

FEDERAL RESERVE BANKS. Federal Reserve banks during the year 1928 definitely felt the impetus of the great expansion of credit that was occurring and exhibited the effects of it as never before. They already lost severely in gold during the latter part of 1927 and this loss continued during the early months of 1928, being shown in a greatly reduced gold reserve. The accompanying statement presents this loss as \$155,000,000, but the real amount was considerably greater, being masked by the process of "ear-marking."

Other changes in the principal items involved an unusually large increase in the total amount of credit extended, this being raised to the highest figure for a good many years past, as reflected in the item, total bills discounted, which showed a figure of \$1,151,464,000 and an increase of \$630,000,000. The character of these changes threw light upon the general alterations which were occurring in the member banks. The latter having become greatly expanded and loaned up, found it necessary to resort to Reserve banks in order to get relief whenever they found that the pressure upon them from their customers was too hard to bear. Accordingly practically every increase in member-bank credit would be reflected in a corresponding increase in Reserve-bank credit, the outcome thus being to develop a parallel state of inflation as the year proceeded.

Reserve banks had opened the year with a discount rate of $3\frac{1}{2}$ per cent, raised it pretty generally to $4\frac{1}{2}$ per cent at the beginning of February, while the eastern banks at the opening of summer undertook another advance to 5 per cent. There was general opinion that the rate was too low and a large party in the Federal Reserve System was anxious to bring about an increase to a still higher level. The effort,

**RESOURCES AND LIABILITIES OF THE TWELVE
FEDERAL RESERVE BANKS COMBINED**
[In thousands of dollars]

Resources	Jan. 2, 1929	Dec. 26, 1928	Jan. 4, 1928
Gold with Federal Reserve agents	1,233,332	1,171,408	1,477,638
Gold redemption fund with U. S. Treasury	73,693	83,171	51,447
Gold held exclusively against F. R. notes			
Gold settlement fund with F. R. Board	1,307,025	1,254,579	1,529,085
Gold and gold certificates held by banks	685,846	750,186	594,958
	595,256	579,474	618,458
Total gold reserves ..	2,587,627	2,584,239	2,742,501
Reserves other than gold	130,898	104,588	146,719
Total reserves	2,718,525	2,688,827	2,889,220
Non-reserve cash	83,308	64,093	81,352
Bills discounted:			
Sec. by U. S. Government obligations	757,451	713,759	348,783
Other bills discounted	394,013	453,820	172,096
Total bills discounted	1,151,464	1,167,579	520,879
Bills bought in open market	484,358	489,270	387,131
U. S. Government securities:			
Bonds	52,511	52,717	293,322
Treasury notes	120,973	104,759	104,583
Certificates of indebtedness	70,469	74,852	229,498
Total U. S. Government securities ..	243,953	232,328	627,403
Other securities	9,885	10,135	880
Total bills and securities	1,889,660	1,899,312	1,536,293
Due from foreign banks	728	728	566
Uncollected items	826,187	722,108	860,067
Bank premises	58,591	60,629	57,972
All other resources ..	7,715	7,704	15,043
Total resources	5,584,714	5,443,401	5,440,513
Liabilities			
F. R. notes in actual circulation	1,829,364	1,910,838	1,760,710
Deposits:			
Member bank—reserve account	2,493,757	2,409,195	2,485,757
Government	30,999	15,782	15,752
Foreign bank	5,935	7,534	5,652
Other deposits	33,042	22,582	29,138
Total deposits	2,563,733	2,445,093	2,536,299
Deferred availability items	776,626	654,553	768,850
Capital paid in	146,952	146,868	132,512
Surplus	254,398	233,319	233,319
All other liabilities ..	13,641	42,780	8,823
Total liabilities ...	5,584,714	5,443,401	5,440,513
Ratio of total reserves to deposit and F. R. note liabilities combined	61.9%	61.6%	67.2%
Contingent liability on bills purchased for foreign correspondents	325,064	327,315	232,181

however, being unsuccessful, changes in the personnel of the system occurring during the year tended on the whole to impair the continuity of policy which might otherwise have been expected, and the general feeling during the latter part of the autumn was that the system was drifting without very definite leadership to direct it into the right channel.

BANK CREDIT. The survey already made indicates the broader tendencies of bank credit during the year 1928, but a few special phases call

for particular mention. Of these the most interesting is the great expansion of what are called brokers' loans. These are recapitulated by the New York Stock Exchange for the year as follows, the increase shown between January and December being thus approximately \$2,000,000, 000 or about 50 per cent:

BROKERS' LOANS

1928	Demand	Time	Total
Jan. 31	\$3,392,873,281	\$1,027,479,260	\$4,420,352,541
Feb. 29	3,294,378,654	1,028,200,260	4,322,578,914
Mar. 31	3,580,425,172	1,059,749,000	4,640,174,172
April 30	3,788,937,599	1,168,845,000	4,907,782,599
May 31	4,070,359,081	1,203,687,250	5,274,046,281
June 30	3,741,632,505	1,156,718,982	4,898,351,487
July 31	3,767,694,495	1,069,653,084	4,837,347,579
Aug. 31	4,093,889,293	957,548,112	5,051,437,405
Sept. 30	4,689,551,974	824,087,711	5,513,639,685
Oct. 31	5,115,727,534	763,993,528	5,879,721,062
Nov. 30	5,614,388,360	777,255,904	6,391,644,264
Dec. 31	5,722,258,724	717,481,787	6,439,740,511

The crude figures for brokers' loans thus given, do not set forth the entire details of an interesting development.* One conspicuous feature of the situation was the great increase of loans made for "account of others" under which head are included loans made by private corporations and by foreign banks. From both sources great quantities of money came into the market, corporations finding it profitable to lend at 8 or 10 per cent the money which they had obtained from the public on their own obligations at 5 or 6 per cent. Anxiety about the brokers' loan account persisted throughout the year, particularly because of the very large number of persons who were involved in the market, and because also of the more and more frozen character of bank portfolios. Generally speaking, banks tended more and more to put their funds into the stock market and to let their portfolios assume a rather non-liquid position. From this point of view the close of the year represented a state of things which was generally viewed as rather bad, with symptoms of still further deterioration.

BANK SUSPENSIONS, BY CLASS OF BANK
[Amounts in thousands of dollars]

Month	All banks		Member banks		Non-member banks	
	Num-ber	Total de-posits	Num-ber	Total de-posits	Num-ber	Total de-posits
1927						
July	37	12,162	2	2,638	35	9,524
August	27	17,364	5	8,881	22	8,483
September	36	8,988	6	1,257	30	7,731
October	44	11,542	9	3,729	35	7,813
November	43	11,210	6	3,105	37	8,105
December	49	8,476	7	1,310	42	7,166
Total, 12 mos.	662	193,891	124	66,336	538	127,555
1928						
January	53	12,721	8	3,456	45	9,265
February	50	20,767	11	10,982	39	10,685
March	65	19,443	9	4,373	56	15,070
April	44	9,910	6	3,361	38	6,549
May	29	6,968	5	2,287	24	4,681
June	28	15,209	2	1,699	26	13,510
July	24	6,076	2	468	22	5,608
August	21	6,927	4	2,498	17	4,434
September	20	8,849	4	3,806	16	5,043
October	41	9,134	3	1,154	38	7,980
November	72	28,984	9	13,792	63	15,192
December	44	11,798	10	5,204	34	6,594
Total, 12 mos.	491	156,786	73	52,175	418	104,611

BANK FAILURES. The bank-failure epidemic which had shown signs of slackening during the latter part of 1927 continued to lose ground during the year 1928 and as a result total failures for the year were only about 491 or a little more than half the number for 1927. The accompanying brief table furnishes the compilation of the results as compiled by the Federal Reserve System for the year, and shows marked improvement not only in number but in volume of assets affected.

Nevertheless the continued existence of so many bank failures was regarded as an extremely undesirable phase of the banking situation. It apparently was not due to any general improvement in banking methods that curtailment of failures occurred, but rather to the subsidence of agricultural difficulties and the existence of distinctly more prosperous conditions the country over. The remedies suggested by the American Bankers' Association a year earlier for correcting tendencies to failure among banks were not acted upon, but with the decline of the failure epidemic itself, general interest in the evil as a matter calling for real and immediate correction seemed to fall off, and by the end of the year a rather disappointing attitude of indifference on the whole subject was to be noted, not only among bankers but on the part of the general public as well.

BRANCH BANKING. The subject of branch banking which had been so urgent a matter of controversy for a year or two received relatively little attention during 1928, largely due to the fact that through the process of amalgamation the larger banks were finding it possible to obtain about all the branch accommodations that they needed. During the year the comptroller of the currency authorized the establishment of 103 new city branches, but at the same time 42 already authorized were discontinued, leaving a total of 188 in all organized and still existing under the Act of Feb. 25, 1927. Conversion of State banks, and consolidation of State banks with national banks added seventy new branches, but thirty-eight were lost by liquidation of banks or otherwise. The total in operation under the national system at the close of the year was in the neighborhood of 1000. Progress in branch banking among the several States largely took the form of the development of chain banking although in a few States regularly organized branches continued to be added. However, the attitude of the Federal Reserve System tended to slow down progress of legitimate branch organization among member institutions. The whole question remained about as unsettled at the close of the year as it was at the beginning.

INTERNATIONAL RELATIONS. Progress in international relations during the year was substantial owing to the fact that a much more highly stabilized condition of foreign currencies had been attained. This made it possible to use the facilities extended by foreign banks much more freely than could otherwise have been thought of. The balances of foreign banks in the United States continued very large, notwithstanding that they were used for the purpose of effecting a heavy exportation of gold amounting to about \$500,000,000 between June 30, 1927, and June 30, 1928. It was not necessary to buy

as liberally abroad in the foreign bill market as had been the practice of Federal Reserve Banks during the preceding year, Federal Reserve banks continued the practice of earmarking gold for foreign account, the United States becoming gradually a base upon which a good many of the stabilized currencies of the United States rested by reason of the establishment of what was practically a gold exchange standard between them and the New York market. Foreign countries moreover began to endeavor to develop a condition of greater independence in home matters and to attempt the restriction of borrowing even by private citizens in the American market where possible.

CONDITIONS AT CLOSE OF YEAR. Banking problems at the close of the year were chiefly concerned with the probable results of the over-expanded condition of domestic credit, on account of the undue drafts made by the Stock Exchange upon the banking funds of the country. The possibility of reaction in some serious form had grown more intense during the course of the year. The gold movement out of the country which had caused substantial anxiety up to July 1st, had been largely checked, but its renewal at any moment with correspondingly bad effects upon the maintenance of sound credit conditions in the United States was feared as a decided possibility. It was generally felt by business and financial authorities that there was much ground for anticipating unfavorable banking and credit developments during 1929 and that these could be averted only by the exercise of genuine skill. This left the banking credit situation as practically the only seriously discouraging feature of the industrial and financial outlook at the beginning of the New Year. See also articles, *BUSINESS REVIEW*; *FINANCIAL REVIEW*.

BAPTISTS. In 1928 there were in the United States 14 bodies comprising that branch of the Christian Church known as Baptists, which numerically constituted the second largest Protestant group. While the Baptists trace their origin to the Protestant Reformation in the sixteenth century and churches were found in that period in Germany and Switzerland, the first Calvinistic Baptist Church was formed in London in 1638 and the First Baptist Church in America was probably established by Roger Williams in Providence, R. I., in 1639, although this honor is disputed by the First Baptist Church of Newport, R. I., organized the same year or shortly after. As a result of political differences, and particularly on account of the question of slavery prior to the Civil War, the Southern Baptists withdrew from the national organization in 1845, forming the Southern Baptist Convention which, since that time, has functioned not as a new denomination, but as an organization for the purpose of directing missionary and general evangelistic work in the churches of the Southern States. A National Baptist Convention representing the Negro churches was also formed. In addition to the main body, other divisions early began to appear. These were known as "Primitive," "United," "General," "Free," etc. In its polity the church is congregational, each church being sovereign as to its own discipline and worship. Applicants for the ministry are licensed to preach by the church in which they hold membership.

Statistics prepared by the *American Baptist Year Book* in 1928 showed in the United States a total of 55,584 churches in 1927, with 49,454 ordained ministers; 2,135 local associations; and 341,585 baptisms during the year, making a membership of 8,685,881. Sunday schools numbered 46,966 with an enrollment of 5,396,439. Church property was valued at \$451,758,600, and contributions amounted to \$74,644,005, of which \$60,481,118 was for current expenses and \$14,162,887 for beneficences. These figures were divided among the three main groups of the denomination as follows: The Northern Baptist Convention, composed of 37 conventions in 35 States reported 8338 churches; 428 associations; 8850 ministers; 66,640 baptisms during the year; 1,419,883 church members; 7217 Sunday schools with a membership of 1,141,720; and contributions amounting to \$31,544,284. The Southern Baptist Convention consisted of 18 State conventions and had 25,561 churches; 980 associations; 22,899 ministers; 3,765,001 members, of whom 202,420 were baptized during the year; 22,187 Sunday schools, with 2,821,079 members; and contributions of \$40,040,843. There were 30 Negro Baptist Conventions with 21,712 churches; 728 associations; 17,743 ministers; 3,515,542 church members, 73,059 of whom were additions by baptism; 1,448,259 Sunday-school scholars in 17,592 schools; and \$3,537,999 in contributions. Could statistics have been adequately and correctly reported, they would have revealed a Negro Baptist constituency approximating 5,000,000.

In the Dominion of Canada there were three conventions; churches numbered 1286; ministers 824; members 143,106, of whom 5452 were additions by baptism, 1221 Sunday schools, and 113,214 scholars; and contributions amounted to \$2,858,645. There were also reported 95 churches in Mexico, with 50 ministers and 6147 members.

The denomination maintained in the United States and Canada 235 educational institutions, which in 1928 had 84,456 students, 5277 instructors, property aggregating \$122,268,300, endowments valued at \$126,624,879, and an annual income for the year of \$30,628,888.

Of these institutions, the Northern Baptists maintained 60, the Southern Baptists 114, the Colored Baptists 56, and 7 were in the Dominion of Canada. There were 36 orphanages, 30 homes and 34 hospitals under the direction of the denomination. Large staffs of workers were engaged in home missions and in foreign missions in the West Indies, Central America, South America, India, Burma, China, Japan, Africa, the Philippines, and European countries.

In addition to several unorganized groups of foreign-speaking Baptists in North America, there were the following organized bodies which held their own conferences; German-, Swedish-, French-speaking Baptists of New England, Finnish Baptist Mission Union, American Magyar (Hungarian), Italian, Danish, Norwegian, Czechoslovak, Polish, Rumanian, Portuguese, and Russian-Ukrainian Conferences. Spanish-speaking (Mexican) Baptists are well organized in some sections, North and South; and there are unorganized bodies of Chinese and Japanese Baptists. Statistics for these bodies in 1928 were as follows: Churches, 944; ministers, 749; baptisms, 4708; membership, 89,968; Bible schools, 891;

Bible-school enrollment, 88,714; property valuation, \$12,104,500; and contributions, \$2,702,836.

Smaller branches of the denomination, differing in various respects from the main branches of the church, include the following: Six-Principle Baptists (the International Old Baptist Union), Seventh-Day Baptists, Free Will Baptists, Colored Free Will Baptists, Free Will Baptists (Bullockites), General Baptists, Separate Baptists, Regular Baptists, United Baptists, Duck River Primitive Baptists (Progressive), Scandinavian Independent Baptists, and Two-Seed-In-The-Spirit Predestinarian Baptists. See also BAPTISTS, FREE.

The denomination maintains several publishing houses, of which the most important is the American Baptist Publication Society in Philadelphia. The official periodical of the Northern Baptist Convention is *The Baptist* (Chicago); of the National Baptist Convention, the *National Baptist Voice* (Nashville); while many sectional publications represent the Southern Baptist Convention.

The Baptist World Alliance was organized in 1905 and meets every five years; the last meeting was held in July, 1928, in Toronto, Canada. Its relationship to the Baptist churches is purely advisory and its purpose is discussion of interests common to the denomination. The *British Hand Book* for 1928 prepared the following statistics of the denomination in 1927:

	<i>Churches</i>	<i>Ministers</i>	<i>Members</i>
America	57,342	45,135	8,587,498
Europe	8,213	4,735	1,636,342
Asia	3,158	1,816	343,036
Africa	1,092	338	72,102
Australasia	460	369	33,534
Total	70,265	52,393	10,672,512

BAPTISTS, FREE. A branch of the Baptist denomination, which by 1928 had practically completed its policy of merging with the Northern Baptist Convention. There was but little independent activity of the Free Baptists, yet the General Conference of the Free Baptists, the national incorporated organization, still preserved its legal existence and powers. Estates in which life interests terminated or other entailments were removed, were still coming to its treasury. The majority of Free Baptist ministers, churches and members were included in the enumeration of the Northern Baptist Convention. Alfred Williams Anthony was serving as corresponding secretary and treasurer. See BAPTISTS.

BAR ASSOCIATION, AMERICAN. A national association organized in 1878 to advance the science of jurisprudence, the administration of justice, harmony in legislation, and the observance of legal precedents throughout the United States, as well as to uphold the legal profession and promote good understanding among its members. The fifty-first annual meeting, which was also the Semi-Centennial Meeting of the Association, held at Seattle, Wash., July 25-27, 1928, was attended by 2000 delegates. The retiring president, Silas H. Strawn, of Chicago, in his opening address, "Fifty Years Progress in Law," called attention to the more important changes in substantive law during that period; reviewed the history of the *Sixteenth*, *Seventeenth*, *Eighteenth*, and *Nineteenth Amendments*; discussed the *Child Labor Case* (247 U. S. 251); dwelt

upon transportation problems and legislation respecting the radio, advocating, in the latter case, that regulatory powers affecting the radio should be vested in the Secretary of Commerce, rather than in a separate commission; and, among other subjects, referred to *Workmen's Compensation*, *Anti-Trust Legislation*, the *Clayton Act*, the *Federal Trade Commission*, *Business Corporations*, *Investment Trusts*, *Causes of Crime and Law Enforcement* and the attitude of the people as a remedy, *Legal Education*, the *Federal Reserve System*, and the *McFadden-Pepper Bill*.

At the Seattle meeting, the Hon. Harlan F. Stone, Associate Justice of the United States Supreme Court, delivered an address on "Fifty Years' Work of the United States Supreme Court," in which he pointed out that the great industrial and commercial expansion following upon the Civil War had furnished most of the important questions before the Supreme Court out of which had come the significant developments in constitutional and private law during that period. The Hon. Hugh Kennedy addressed the convention on "Character and Sources of the Constitution of the Irish Free State," and F. M. Jewett, vice president of the American Telephone and Telegraph Co., spoke on "Fifty Years of Science and Engineering," while Dr. John H. Finley, former president of New York University and editor of the *New York Times*, chose as the topic of his address, "Fifty Years of Progress in Education." An interesting feature of the meeting was the presentation of an entertainment entitled, "Magna Charta Pageant-Drama."

The convention went on record as approving an Act to promote Conservation of Petroleum and Natural Gas, etc.; declined to approve H. R. 9586, a bill to amend the copyright law so as to permit adhesion of the United States to the International Copyright Union; instructed the Committee on Jurisprudence and Law Reform to oppose the Norris Bill and any other bill attempting to diminish jurisdiction of the Federal Courts as defined by Section 24 of the Judicial Code; and passed various other resolutions and recommendations. Reports of committees adopted without opposition were those of air law, American citizenship, jurisprudence and law reform, commerce, commercial law and bankruptcy, international law, professional ethics and grievances, uniform judicial procedure, change of date of the presidential inauguration, legal aid, and insurance. The executive committee selected Memphis, Tenn., as the place for holding the 1929 meeting of the association. Officers elected at the meeting were Gurney E. Newlin, of Los Angeles, Calif., president; John H. Voorhees, of Sioux Falls, S. Dak., reelected treasurer; William P. McCracken, of Chicago, reelected secretary. During the year, a marble statue of Sir William Blackstone, a gift of the American Bar Association to the Bar of England in 1924, was placed in position in the Central Hall of the Law Courts in London, in recognition of the influence of the great English commentator on American jurisprudence. The headquarters of the association are Room 1119, 209 S. LaSalle Street, Chicago. See CRIME: LABOR ARBITRATION AND CONCILIATION.

BAR-BADOS. An island colony of Great Britain, lying to the east of the Windward Islands; the most easterly of the Caribbean Islands. The area is 166 square miles and the population, according to the census of 1921, 156,312; esti-

mated, Dec. 21, 1926, 169,885. The capital and chief city is Bridgetown, with a population of 13,486. In 1926 the average attendance in the elementary schools was 14,610 out of an enrollment of 22,595. In 1926 there were 5148 births and 4869 deaths. The figures in pounds sterling for revenue, expenditure, imports and exports, and public debt for 1926-27 were as follows:

Revenue	£387,462
Expenditure	410,585
Imports	2,155,167
Exports	1,287,161
Public debt	591,000

The principal imports were cotton manufactures, manures, flour, dried fish, machinery, salt beef and pork, and rice. The principal exports were sugar, molasses, raw cotton, and rum. The administration is under a governor assisted by an executive council, an executive committee, a legislative council of nine members appointed by the King, and an assembly of 24 members elected annually by the people. Governor in 1928, W. C. F. Robertson.

BARBERRY PLANTS. See BOTANY, under *Plant Diseases*.

BARCELONA INTERNATIONAL EXPOSITION. See EXPOSITIONS.

BARLEY. The barley production in 1928 of 33 countries reporting to the International Institute of Agriculture, Rome, was estimated at 1,631,700,000 bushels, an increase of 17.3 per cent above the yield of 1927 and of 25 per cent above the average for the five years 1922-26. The acreage in these countries was 69,865,000, which was 10.3 per cent above the acreage of 1927 and 13.5 per cent above that of the five-year average. The production of the leading barley-producing countries, not including the United States, was as follows: United Socialist Soviet Republics, 261,804,000 bushels; Canada, 144,875,000 bushels; Germany, 134,786,000 bushels; Poland, 89,053,000 bushels; Spain, 82,538,000 bushels; and Rumania, 75,620,000 bushels. Argentina in 1927-28 produced 14,560,000 bushels on 1,321,000 acres.

The United States in 1928, according to estimates by the Department of Agriculture, produced 356,868,000 bushels, or about one-third more than in 1927 when the yield was 265,882,000 bushels. The increase in production in 1928 was nearly 86 per cent over the average production for the five years 1922-26. The acreage for the years 1928 and 1927 was 12,539,000 and 9,476,000 acres, and the average yield per acre 28.5 and 28.1 bushels respectively. The average farm price on Dec. 1, 1928, was 55.2 cents per bushel or 12.6 cents below the corresponding price the year before. The total value at these prices of the crop of 1928 was \$197,128,000 and that of the crop of 1927, \$180,200,000.

The 1928 production of the leading barley-growing States among the thirty-five States reporting yields was as follows: Minnesota, 60,000,000 bushels; North Dakota, 55,564,000 bushels; South Dakota, 35,675,000 bushels; California, 31,842,000 bushels; Iowa, 27,068,000 bushels; Wisconsin, 26,898,000 bushels; Illinois, 20,060,000 bushels; Kansas, 17,661,000 bushels; Nebraska, 14,018,000 bushels; and Colorado, 13,128,000 bushels. All other States reported yields of less than 10,000,000 bushels. All of these States reported an increase in acreage over the preced-

ing year and the marked increase in area and yield due to the growing importance of barley as a feed crop occurred mainly in the North Central States. The average yield per acre ranged from 19 bushels in New Mexico to 49 bushels in Utah. Among the States mentioned above, Wisconsin ranked first with an average yield of 37.1 bushels per acre.

The average farm price per bushel on Dec. 1, 1928, ranged from 43 cents in North Dakota to \$1.10 in Maine, Vermont, and Tennessee and \$1.20 in North Carolina. In the fiscal year ended June 30, 1928, the United States exported 36,580,000 bushels of barley and 2,964,000 bushels of malt and imported 360,000 bushels of the grain.

BARNACLES. See ZOOLOGY, under *Crustacea*.

BARNARD COLLEGE. See COLUMBIA UNIVERSITY.

BARRETT, THOMAS AUGUSTINE. See STUART, LESLIE.

BARRON, CLARENCE WALKER. American financial editor and publisher, died at Battle Creek, Mich., October 2. He was born at Boston, Mass., July 2, 1855, and was graduated from the English High School of that city in 1873. He took a position as reporter on the *Boston Daily News* in the year of his graduation, and, already equipped with shorthand, an unusual convenience with newspaper men of his day, he wrote, "Wendell Phillips on Finance," an article covering a debate between Phillips and William Lloyd Garrison, which served to popularize financial discussions. He joined the editorial staff of *The Boston Transcript* in 1875, being also financial reporter, and in 1887 he founded *The Boston News Bureau*, which supplied a budget of financial information, published in bulletin form at the end of the day. He later became president of the company, and he founded *The Philadelphia News Bureau*, a similar concern, in 1896. Moving to New York, Mr. Barron in 1901 purchased control of Dow, Jones & Company, a publishing house which operated electric page newspapers simultaneously in various cities and in the same year he bought *The Wall Street Journal*. He founded *Barron's, the National Financial Weekly* in 1921, and he was publisher of that paper, as well of his four earlier ventures at the time of his death, besides being president of *The Wall Street Journal Building Company*, and *Doremus & Company*, advertisers. He received the honorary D.Sc. degree from Boston University in 1927. Mr. Barron was also interested in farming and became one of the largest importers of Guernsey cattle in the United States, organizing the Oaks Farm and Creamery at Cohasset, Mass., in 1908. Mr. Barron not only entirely reorganized the disseminating of financial news, but he contributed many authoritative articles on finance to periodicals, and wrote several books, including: *The Federal Reserve Act* (1914); *The Audacious War* (1915); *The Mexican Problem* (1917); *War Finance* (1919); and *A World Remaking* (1920).

BARTHOLOMÉ, ALBERT. French sculptor and president of the Société Nationale des Beaux-Arts, died at Paris, October 31. He was born at Thiverval, Aug. 29, 1848, and, altering his original decision to become a lawyer, he studied painting under Menn in Geneva and Gérôme in Paris. He early acquired a reputation as an artist with his genre pictures. He

commenced to teach himself sculpture in 1876, and within a year had completed a memorial to his wife, which was placed in the churchyard of Boullant. His success was established by his monument *Aux Morts*, erected in 1895, at the entrance of the cemetery of Père-Lachaise. The statue exemplifies Bartholomé's greatest creation, the nude in an attitude of grief. Following the traditional or "classical" French school, he was recognized as one of the best sculptors of his time, receiving the *grand prix de sculpture* at the *exposition universelle* in 1900. He was, however, not responsive to the changes of an impressionistic nature which brought about such sculptors as Rodin. The French Government made him a commander of the Legion of Honor, and Belgium named him Grand-officier de l'Ordre de Léopold. He also was awarded the grand-croix d'Isabelle-la-Catholique by Spain, and made a grand-officer of the Sacred Treasure by Japan. He was elected to the Royal Academies of England, Scotland, Belgium, and Spain, and was president of the Société Nationale des Beaux-Arts. He designed the French Croix de Guerre. One of the most famous of his many memorials is *Paris, 1914-1918*, at the Place de Carrousel, by the Louvre. Others are dedicated to Meilhac, and to M. Pain at the Montmartre Cemetery; to Jean Jacques Rousseau at the Panthéon; to the family of Princess Gabri-machi at Bucharest; to Engel at Chênais-Belfort; to M. Schoen at Montlignon, and to Sénateur Raymond at Montbrison; to Honoré Champion at the Montparnasse Cemetery; to Charles Giron at Genthod-Genève; to jeune de Laumont at Goux-Arras; to *auteurs et compositeurs dramatiques* at 12, rue Henner, Paris; to *avocats*, and to *magistrats morts au champ d'honneur* at the Palais de Justice, Paris; and to *morts pour la patrie* at Creusot. Much of Bartholomé's less serious work was purchased by museums throughout Europe. Those best known are *Portrait de Mme. Bartholomé* in the Luxembourg; *Jeune Fille se Coiffant* in Dresden; *L'adieu* in Brussels; *Femme Sortant du Bain*, Vienna; *Baigneuse* at Aix-la-Chapelle; *Petite Fille en Pleurs* in Copenhagen; *L'union dans l'au Dela* at Rome; and *Baigneuse* at Rheims. He is also represented at Marseilles, Edinburgh, and Santiago.

BASEBALL. The New York American League Baseball Club, familiarly known as the Yankees, in 1928 for the second year in succession dominated professional baseball. Following their successful defense of the league pennant, the Yankees broke all records by overcoming the St. Louis Cardinals, flag winners of the National League, in four straight world-series games. In the previous year they had attained world championship honors through four consecutive victories over the Pittsburgh Pirates. No other team in baseball history had ever succeeded in winning eight straight world-title contests. Other unprecedented feats accredited to the Yankees included going through four world-series games without change of pitcher, and the batting mark of .625 for four games set by George Herman (Babe) Ruth.

The race for the American League pennant was of the closest nature, the Philadelphia Athletics making a wonderful spurt to wipe out a 13½ game margin gained by the Yankees early in the season. The Athletics actually assumed the lead on September 8. A series be-

tween the two teams opened the following day at the Yankee Stadium with a double header which attracted 85,265 spectators, the largest baseball crowd in history. The Yankees won both these games and eventually finished 2½ games ahead of the Athletics.

The National League struggle also was of the bitterest sort with the New York Giants, Cincinnati Reds, Brooklyn Robins, and St. Louis Cardinals setting the early pace. The Cardinals went into the lead on June 16 and remained there until the end, but they were never able to shake off their rivals. Early in August the Giants lost eight games in a row and as it turned out this reverse cost them the pennant, the Cardinals finishing two games in the van.

The leading batters of 1928 were Rogers Hornsby of the Boston Braves in the National League with an average of .387 and Leon A. (Goose) Goslin of the Washington Senators in the American League with .379. James Bottomley of the St. Louis Cardinals and Gordon Cochrane of the Philadelphia Athletics were voted the most valuable players in their respective leagues. The two leading pitchers in the National League were Larry Benton of the Giants in percentage of victories and Dazzy Vance of the Brooklyn Robins in effectiveness. In the American League, Ernie Crowder of the St. Louis Browns and Garland Braxton of the Washington Senators shared these honors.

The pennant winners in the more important minor leagues in 1928 were: International, Rochester; American Association, Indianapolis; Pacific Coast League, San Francisco; Eastern, New Haven; New England, Lynn; Southern Association, Birmingham; South Atlantic, Asheville.

The popularity of baseball in Japan showed an amazing growth in 1928, crowds of 50,000 being attracted to the Sunday games in the larger cities. Cuba maintained its usual leagues with interest in the various races unabated.

College baseball, as in former years, failed to pay expenses even when teams of especially excellent calibre were developed. The University of Pennsylvania captured the Eastern Quadrangular League championship. New York University, Fordham, Georgetown, and Holy Cross also had exceptionally strong nines.

BASHFORD, HERBERT. American author, librarian, and playwright, died at Piedmont, Calif., July 13. He was born at Sioux City, Iowa, Mar. 4, 1871, and was educated at public and private schools. He was head of the public library of Tacoma, Wash., and State librarian of Washington, 1897-1901. He was a member of the editorial staff of the *San Francisco Bulletin*, 1909-19. His play, *The Woman He Married*, was produced by Virginia Harned in 1910, and *Taken In* by Henry B. Walthall in 1920. He wrote a number of books also, including: *Northwest Nature Stories* (1897); *Songs From Puget Sea* (1898); *The Tenting of the Tillicums* (1905); *At the Shrine of Song* (1909); *Yosemite* (a poem) (1924). Besides the two plays mentioned he wrote also: *Running for Governor*, *Heritage of the Red*; *The Defiance of Doris*, and *The Voice Within*.

BASKETBALL. This branch of sports maintained its popular appeal in 1928 and thousands of college, school, A. A. U. industrial, and Y. M. C. A. "fives" throughout the United States played through long schedules. The champion-

ship of the Eastern Intercollegiate League was won by the University of Pennsylvania, but only after a play-off battle with Princeton which the Philadelphians captured by a score of 24 to 22. Indiana and Purdue tied for the Western Conference title, each team having ten victories as against two reverses. The University of Southern California produced the strongest five in the Pacific Coast Conference. The University of Pittsburgh played through a schedule of twenty-one games without suffering defeat. The National A. A. U. championship was won by the Cook County Paint Co. team of Kansas City, Mo.

BASSETT, JOHN SPENCER. American historian, died at Washington, D. C., January 27. He was born at Tarboro, N. C., Sept. 10, 1867. After his graduation from Trinity College, N. C., in 1888, he was appointed professor of history there, in 1893; and in 1906 became professor of history at Smith College, Northampton, Mass. He was a member of several American historical societies (secretary of the American Historical Association from 1919 until his death), and a fellow of the Royal Historical Society of London. Besides five volumes on the history of North Carolina, he wrote: *The Federalist System* (1905); *Life of Andrew Jackson* (1911); *A Short History of the United States* (1913); *The Plain Story of American History* (1915); *The Middle Group of American Historians* (1917); *The Lost Fruits of Waterloo* (1918; 2d ed. 1919); *Our War With Germany* (1919), *Selections From the Federalist* (1921), and *The League of Nations; a Chapter in World Politics*, published in 1928, shortly after his death. He also edited, among other works, the following: *Writings of Colonel William Byrd, Esq. of Westover, in Virginia*, (1901); *Correspondence of George Bancroft and Jared Sparks* (1917), and *The Correspondence of Andrew Jackson* (6 vols., 1925).

BATES COLLEGE. A non-sectarian college for men and women at Lewiston, Me., founded in 1864. For the autumn term of 1928 there were 615 students, of whom 356 were men and 259 women; in the summer session there was a total of 229, of whom 96 were men. The faculty and administrative officers numbered 50. The permanent funds amounted to \$1,800,000; total expenditures for the year were \$254,144; and the budget involved an appropriation of \$280,052. The library contained 55,732 volumes. The year 1927 saw the renovation of a recitation building, providing more class rooms and offices; the honors courses for superior students, previously adopted, were further developed and improved; and a debating team which was sent around the world met representative teams at some 25 leading universities of New Zealand, Australia, South Africa, and Great Britain. President, Clifton Daggett Gray, Ph.D., LL.D.

BATTLE CRUISER. See NAVAL PROGRESS.

BATTLESHIP. See NAVAL PROGRESS.

BATTISTINI, MATTIA. A famous Italian baritone, died at Rieti, near Rome, November 7. He was born in Rome, Feb. 27, 1857, and made his debut in Donizetti's *Favorita* at the Teatro Argentina in Rome, in 1878. After that he sang for some years in Buenos Aires, then returned to Italy and appeared in London in 1883 and 1887, without attracting unusual attention. But when, in 1888, he was heard at La Scala, in Milan, he created a sensation, and from that time on he

was regarded as the foremost of Italian baritones, constantly filling engagements at all the great European opera houses, almost until his death. His voice was of marvelous beauty and power, and even in the last years showed little influence of the passage of time. Whatever may have been the reason for his refusal, the fact remains, that this world-famous artist firmly declined repeated offers to appear in the United States.

BAUMES LAWS. See CRIME.

BAUXITE. The production of bauxite in the United States in 1927 was 320,940 long tons, valued at \$1,988,780, a reduction of 18 per cent both in quality and value, as compared with 1926 when the production was 392,250 long tons, valued at \$2,415,200. Arkansas, with an output of 303,830 tons, valued at \$1,892,860, was the leading bauxite producing State in the Union in 1927, while in Alabama production was limited entirely to the Eufaula district, Barbour County, which was opened in 1926, and no bauxite was produced in Tennessee. World production of bauxite increased during the year along with expansion in the manufacture of aluminum, the growth of the chemical and abrasive industries, and an increasing demand for aluminous cements. Exports of bauxite and bauxite concentrates increased, especially during 1926 and 1927, in response to increased aluminum manufacture in the Canadian and Norwegian plants of the Aluminum Co. of America. Exports from the United States in 1927 totaled 121,858 long tons valued at \$7,800,491, and imported bauxite, especially from South America, increased in quality and value, the total imports being 356,580 tons valued at \$1,572,236.

BAVARIA. A constituent state of the German Republic; formerly a kingdom within the German Empire, ruled for more than a century by the Wittelsbach dynasty, which was deposed after the revolution following the World War. The new state adopted a republican form of government on Nov. 22, 1918. Area 29,334 square miles; population, according to the census of 1919, 7,140,340; according to the census of 1925, 7,379,594. Chief cities: Munich, with a population of 680,704 in 1925; Nuremberg, 392,494; Augsburg, 165,522; Ludwigshafen, 101,869. In 1926 there were 52,683 marriages; 160,179 births; and 96,474 deaths. The religious division of the population of Dec. 1, 1925, was: Roman Catholics, 5,164,786; Protestants, 2,110,327; Jews, 49,163. Education is compulsory between the ages of 6 and 16. In 1926 the chief crops with their areas and yields were as follows: Wheat 668,102 acres, 338,561 metric tons; rye, 1,029,525 acres, 459,603 tons; oats, 1,072,930 acres, 645,249 tons; potatoes, 940,122 acres, 2,962,872 tons; vines, 57,990 acres, 7,322,656 gallons; hops, 30,022 acres, 1889 tons. The census of livestock in the same year showed 414,773 horses, 3,566,584 cattle, 407,061 sheep, 2,106,860 pigs, and 422,000 goats. In 1926 the output of coal was 2,247,768 metric tons; of iron ore, 417,111 tons; pig iron, 225,476 tons, cast-iron ware, 132,950 tons; sulphuric acid, 315,347 tons.

The constitution dates from Aug. 14, 1919. Under it, the supreme power is vested in the people, who are represented by a diet of one chamber elected for four years on a basis of universal, equal, direct, secret, and proportional suffrage, all citizens over 21 years of age having

the right to vote. There is one representative for every 62,000 inhabitants, making a legislature of 129 members. The various parties represented in the Bavarian National Constituent Assembly (elected April and May, 1924) were as follows: Bavarian People's party, 46; Social Democrats, 25; Völkischer Bloc, 12; National Socialists, 6; German Nationals and National Liberals, 14; Bavarian Peasants' and Middle-Class Union, 12; Communists, 7; others, 7. The cabinet as constituted in 1928 was as follows: Premier and Minister of Foreign Affairs, Dr. Held; Education, Herr Goldenberger; Commerce and Industry, Dr. Held; Social Welfare, Herr Oswald; Agriculture, Professor Fehr; Interior, Herr Stuetzel; Finance, Dr. Schmelzle; Justice, Herr Gürtner.

BEAN BEETLE, MEXICAN. See ENTOMOLOGY, ECONOMIC.

BEAUX-ARTS INSTITUTE OF DESIGN.

A school of fine arts in New York City, planned after the École des Beaux-Arts in Paris; organized in 1916 by the Society of Beaux-Arts Architects, for the purpose of furnishing "instructions in the arts, under the Regents of the State of New York, at a minimum cost to students, to bring art students under the criticism of artists who are engaged in active practice, to carry students beyond the academic study of the arts into the province of their application and practice, and to bring about co-operation among the various art schools of the country." The institute maintains a school of sculpture at its headquarters, in which the instructors are sculptors of high standing, who volunteer their services, each serving a term of three months in the life classes, while the instructors in architectural ornament serve for one month or the duration of the treatment of the style which is the subject of the study schedules. A department of architecture is also conducted for the purpose of furnishing a systematic training in architectural design for draughtsmen in offices and for students of architecture in general. Prizes in architecture, sculpture, and mural painting are offered to students throughout the United States. Working under the auspices of the Institute in 1927-28 were 2077 architectural students, 204 students of sculpture, 165 in mural painting. Except in the case of the Paris Prize competitions, there are no restrictions as to the nationality or age of entrants.

The courses offered in the department of sculpture include: Life modeling and architectural sculpture; architectural ornament; life drawing; antique modeling; composition; and a sketch class. During the year 1927-28, the committee on education in the department of architecture conducted twenty-eight competitions for the study of architecture and six for the study of archæology, in addition to the three competitions for the Paris Prize. Various prizes and scholarships were offered to its students through the institute, the most important being: The Paris Prize of \$3600, given by the Society of Beaux-Arts Architects for two and one-half years' study in architecture at the École des Beaux-Arts in Paris (all the competitors, including the winner, in the final competition, receive \$150 each, provided their work is considered satisfactory); the Paris Prize in Sculpture, and a scholarship of \$1200, for one year's study in Paris.

The institute issues a monthly *Bulletin* in which are published the results of all contests, with the reproductions of the best designs submitted. Officers elected at the annual meeting in November, 1928, were: Director, Whitney Warren; director of architectural department, Edward S. Hewitt; department of sculpture, Edward McCartan; mural painting, J. Monroe Hewlett; chairman of the board of trustees, Benjamin W. Morris; vice chairman, William Adams Delano. Headquarters are at 304 East 44th Street, New York.

BEAVER. See ZOOLOGY under *Mammals*.

BECKWITH, THE RIGHT REV. CHARLES MINNEGEODE. American clergyman and bishop of the Protestant Episcopal diocese of Alabama, died at Montgomery, Ala., April 18. He was born in Prince George County, Virginia, June 3, 1851, and was educated at the University of Georgia and the Berkeley Divinity School. After serving as an instructor at the University of the South, he was ordained deacon in the Protestant Episcopal Church in 1881 and priest in 1882. He was assistant rector of St. Luke's Cathedral, Atlanta, Ga., 1880-86; a rector at Houston, Tex., 1886-92; general missionary in the diocese of Texas, 1892-95, and a rector at Galveston, Tex. 1891-1901. He was consecrated bishop of Alabama in 1902. He received the degree of D.D. from the University of the South, 1902, and in 1903 that of S.T.D. from the Berkeley Divinity School. He wrote: *The Trinity Course of Church Instruction* (1898); *The Teacher's Companion to the Trinity Course* (1901); *Rightly Instructed in God's Holy Word* (1902).

BEEF. See LIVESTOCK.

BEEKEEPING. See ENTOMOLOGY, ECONOMIC.

BEE TL ES. See ENTOMOLOGY, ECONOMIC.

BEET SUGAR. See SUGAR.

BELGIAN CONGO. See CONGO, BELGIAN.

BELGIUM. A kingdom of western Europe, situated between France and the Netherlands. Capital, Brussels.

AREA, POPULATION, ETC. The total area, including the districts of Eupen and Malmédy, which were ceded to Belgium after the Treaty of Versailles, is 11,755 square miles. The population, according to the official census of 1920, was 7,465,782; estimated, in 1927 at 7,931,844, which represented a density of 675 per square mile. The chief cities with their population as of Dec. 31, 1926 are Brussels (with suburbs), 808,664; Antwerp, 300,175; Liège, 168,058; Ghent, 162,582. The movement of population in 1926 was: Births, 149,943; deaths, 104,742; marriages 72,517. The emigrants in 1926 numbered 36,150 and the immigrants, 44,525.

EDUCATION. For primary instruction there were in 1927, 8343 primary schools, with 800,400 pupils; 3866 infant schools with 245,650 pupils; and 2104 adult schools with 61,266 pupils. For higher education there were 24 atheneums and colleges, with 8280 pupils; five special atheneums with 388 students; four communal and provincial colleges with 2027 students, and nine private colleges with 1481 students. The next grade of schools are the higher grade schools, of which there were 131 State schools with 28,944 pupils, 17 communal and provincial schools with 5021 pupils, and seven private higher-grade schools with 764 pupils. There are six normal schools for training secondary school teachers and 81 for training elementary school teachers. There are many private or free schools, mostly under

ecclesiastical care. For collegiate education there are universities at Brussels (1829 students in 1926-27); Ghent, 1619; Liège, 2294; Louvain, 3394; and the Colonial University at Antwerp.

PRODUCTION, MINERAL RESOURCES, ETC. Of the total area of 2,945,104 hectares, there were, in 1926, 1,786,750 hectares under cultivation, of which 38.98 per cent were under cereals, 1.18 per cent under vegetables, 5.58 per cent under industrial plants, 13.80 per cent under root crops, and 40.46 per cent under forage. The acreage and yield of the principal crops in 1926 were as follows: Wheat, 354,282 acres, 6,967,682 cwt; barley, 86,932 acres, 1,829,554 cwt; oats, 667,720 acres, 14,726,628 cwt; rye, 557,585 acres, 10,215,242 cwt; potatoes, 396,470 acres, 3,012,589 metric tons; beet (sugar), 158,142 acres, 1,682,827 metric tons; beet (fodder), 193,853 acres, 4,668,353 cwt; tobacco, 6891 acres, 119,320 cwt. On Jan. 1, 1927, there were 250,287 horses, 1,711,702 horned cattle, and 1,143,860 pigs. The most important industries in Belgium are artificial silk, automobiles, glass, iron and steel, lace, linen, and gloves.

Mineral production has always been an important industry in Belgium. The country has natural resources of coal and zinc and after the economic union with Luxemburg in 1922 gained ready access to iron ore. The Belgian coal industry passed through a critical period in 1927, following a rather favorable year in 1926 under conditions largely influenced by the long strike in Great Britain. The outstanding features of the 1927 situation were the continuous accumulation of stocks at pit heads, the steady decline in prices of industrial coal, and the steadily increasing production which passed all records of pre-war and post-war years. Under these circumstances the situation of the coal mines, so satisfactory at the beginning of the year, grew constantly worse. During the last two months matters became so acute that mining interests sought to curtail production by operating on part time.

The consumption of coal, however, remained active. The difficulties, on the whole, apparently resulted from the restricted sale of Belgian coal, owing to the keen competition furnished by British and German producers. With the termination of the British strike, high prices gradually receded and British coal reappeared. A heavy stock accumulation naturally followed in 1927, as well as disastrous competition.

The principal coal deposits in Belgium are in the vicinity of Charleroi. Next in order come the mining centres of Mons, Liège, Centre, Limburg, and Namur. Complete figures covering coal extraction in 1927 show a total of 27,573,550 tons produced by all the operating mines, an increase of 9 per cent over that of 1926. The production of coke during the same year established a new high record for the country. The total production was 5,386,530 tons, as compared with 4,945,920 tons in 1926. The output of briquets was 1,714,000 tons, considerably under that for 1926. See COAL.

The output of other minerals in 1927 was: Pig iron, 3,751,440 metric tons; wrought iron, 166,620 tons; steel, 3,708,495 tons; wrought steel, 3,062,220 tons; crude zinc, 201,630 tons.

COMMERCE. Belgian foreign trade during 1927 increased heavily as compared with the preceding year. Total imports in 1927 were valued at 29,179,537,000 francs (\$811,191,000) as against 22,999,448,000 (\$749,782,000) in 1926; in weight

they increased from 34,379,000 metric tons to 38,000,000 metric tons. There was an even greater increase in the value of exports, from 19,941,774,000 francs (\$650,102,000) in 1926 to 26,620,738,000 francs (\$740,057,000) in 1927; in volume, exports rose from 23,187,000 metric tons to 24,134,000 metric tons. While the visible trade balance was, as usual, adverse, the value of exports in relation to imports marked a further substantial gain. In 1925 the value of exports was 82 per cent of that of imports, in 1926 it was 87 per cent, and in 1927 it was 91.5 per cent.

Features of the trade statistics are the much higher imports of raw materials and the even greater advance in exports of manufactured products. The increase in imports, as well as in exports, comprise practically all categories of merchandise and relate not only to values but also rather generally to quantities. Among the important items showing the principal advances are hides and skins, textile, animal, and metal products; exports of rubber goods, hides, and skins, arms, vehicles, metal products, machinery, and vegetable products increased heavily. There was little change in the relative importance of various countries in Belgian foreign trade. France was first as source of imports and Great Britain was the largest market for exports. Germany was second in importance as a supplier and also as buyer. The other countries of principal importance were the United States, the Netherlands, Argentina, Belgian Congo, Italy, and Switzerland.

Imports from the United States during 1927 totaled 1,093,000 metric tons, very slightly higher than in 1926; their value of 3,218,000,000 francs (\$89,460,000) marked an advance over the preceding year. Purchases of grains increased heavily and were by far the most valuable of the imports. Cotton takings also made a large advance. Other items of principal value on the import side were mineral oils, crude copper, automobiles, oilseed cakes, motors and engines, tobacco, and lumber. Practically all kinds of imports from the United States increased in value and many large quantity increases were registered. Exports to the United States amounted to 951,000 metric tons, valued at 2,412,000,000 francs (\$67,654,000). While the tonnage figure was lower than in 1926 the franc value was higher. Diamonds constituted by far the heaviest item of export to the United States. Although, according to official statistics, their value dropped heavily in 1927, they comprised almost one-quarter of the total value of exports to this country. However, it is generally believed that the falling off is only apparent and that if smuggling operations are taken into account, the exports during 1927 were higher than in 1926.

The second largest classification is textile products, including principally linens, cotton fabrics, and rayon, which showed a big increase. Other principal exports to the United States were manufactures of iron and steel, glass, rabbit skins, cement, untanned skins, leather goods, chemical products, and paper. Exports of cement and of chemical products were much lower than in 1926, and glass exports declined slightly.

FINANCE. The budget estimates for 1928 carried revenues of 10,563,562,000 francs and expenditures of 9,482,731,000 francs; for 1929, revenues of 11,485,090,000 francs and expenditures of 10,255,206,000 francs. On Jan. 1, 1928,

the Belgian public debt amounted to 55,060,000,000 Belgian francs. Internal consolidated debt was 22,346,000,000 francs; internal floating debt, 4,180,000,000 francs; external consolidated debt, 28,577,000,000 francs. Since the stabilization of the Belgian currency in October, 1926, there had been some misunderstanding as to the proper uses and purpose of the created monetary unit—the belga. In his report to the King concerning the stabilization decrees, the Prime Minister stated that the franc remains the basis of the monetary system and will retain its rôle in the national economy. Since the franc continues to circulate in the country, however, it is important that the world should be clearly informed of the profound change in the Belgian fiduciary circulation effected by the stabilization decrees. For this reason the Belgian exchange value of the franc is henceforth established at the multiple of five, which is quoted only for foreign exchange and for that purpose bears the name of "belga." The belga is a mere multiple of the franc and both are at all times interchangeable on the basis of five francs for one belga. The stabilization decree stated that it was forbidden to publish the Belgian franc exchange value in any other form than the belga, and the parity with foreign moneys was established at the rate of 0.20911 grains fine gold for one belga. In case the National Bank issues notes in terms of the belga, they also shall bear a notation of their value in francs. Notes showing their value in francs only are at all times interchangeable with belga notes in the proportion of five to one.

COMMUNICATIONS. The Belgian Government-owned railways began operation as a private company on Sept. 1, 1926, under the company name of Société Nationale Chemins de Fer Belges. The length of the lines owned by this company as of December 31, 1927, totaled 10,404 kilometers, of which 4795 kilometers were main line and 5609 kilometers branch lines and sidings. In order to permit the fiscal year of the railroads to coincide with the calendar year, the first year of operation was carried over from Sept. 1, 1926, to Dec. 1, 1927. The financial results of this 16-month period were as follows: Operating revenues amounted to 3,709,267,147 francs and other revenues to 16,189,967 francs; operating expenses reached 3,121,483,819 francs and other expenses 6,376,334 francs. There were in operation at the close of the year 2734 locomotives, 110,378 freight cars, and 8451 passenger cars.

No new stock had been purchased during the year 1928. In general the rolling stock of the Belgian railroad system was in good condition, although new equipment was noticeably lacking. After the transformation of the Belgian railways into a private corporation, considerable quantities of worn-out locomotives and other rolling stock were scrapped; the remaining equipment was sufficient for the then current needs of the country. The company felt no pressing need for any large amount of new equipment, but plans were being made to cut operating expenses by improvements to the 1928 material, particularly by equipping rolling stock with automatic air brakes. It was stated that the financial situation of the company was sufficiently strong to permit expenditures for new equipment without the necessity of calling for new funds from the public.

The Belgian inland waterways are navigable over 1674 kilometers and their traffic exceeds 28,000,000 metric tons annually. The Belgian Parliament by the Law of Aug. 13, 1928, provided for the central administration of the affairs of these waterways which, with the introduction of motor power since the War, have new importance in Belgian trade and transportation. The programme of motorization calls for 300 hauling tractors in service in 1931. The number of vessels entering Belgian ports in 1926 was 18,931 of 26,944,889 tons; cleared, 18,916 of 26,946,808. In 1927, 11,418 vessels of 23,490,300 tons entered and 11,476 of 23,594,606 tons cleared the port of Antwerp.

GOVERNMENT. Belgium is a constitutional, representative, and hereditary monarchy. Executive power is in the King, acting through a responsible ministry; legislative power is in the King and two chambers, namely the Senate and House of Representatives. The former is elected partly by the direct and partly by the indirect vote of the people, the number being equal to half the number of members of the lower house and proportioned to the population of each province. Those elected indirectly are chosen by the provincial councils. The parties in the Senate elected in 1925 are: Catholics, 71; Liberals, 23; Socialists, 59. The 186 members of the lower house are elected by universal suffrage directly for four years. The party alignment in the House is: Catholics, 78; Socialists, 79; Liberals, 22; miscellaneous, 8. The reigning monarch in 1928 was Albert, who succeeded his uncle, Leopold II, Dec. 17, 1909. The cabinet as appointed Nov. 22, 1927, was composed as follows: Prime Minister and Minister of the Colonies, Henri Jaspar (Catholic); Foreign Affairs, Paul Hymans (Liberal); Justice, M. Janson (Liberal); Education, Maurice Vauthier (Liberal); Finance, Baron Houtart (Catholic); Agriculture and Public Works, Henri Bael (Catholic); Industry, Labor, and Social Insurance, M. Heyman (Christian Democrat); Railways, Marine, Posts and Telegraphs, and Aeronautics, M. Lippens (Liberal); National Defense, Comte de Broqueville (Catholic); Interior, M. Caroy (Christian Democrat).

HISTORY. Belgium passed through a comparatively quiet year. There was some friction with France over the question of the "most favored nation" clause in the treaties between France and Germany and France and Belgium and the consequent reduction in Franco-Belgian trade, largely due to the fact that Germany and Belgium produce approximately the same goods, and France felt that she should buy in Germany in order to reduce the reparations account.

The most striking single event was probably in discussion over the inscription to be placed on the Louvain Library. The library, which was restored by gifts of money collected in America, and which was under the general supervision of Whitney Warren, New York architect, was supposed to have an inscription in Latin, "Furore Teutonico Diruta: Dono Americano Restituta." The translation of this, "Destroyed by Teutonic Fury: Restored by an American Gift," aroused severe comment on the grounds that it tended to perpetuate war hatreds. Mr. Warren insisted that the inscription, which he stated was approved by the late Cardinal Mercier, should be placed on the façade, although he accepted the word "folly" in place of "fury." The Rector of Louvain University, of which the library is a part, object-

ed to the inscription and ordered another balustrade to be built without the inscription. Feeling ran high throughout the country. Some factions favored the retention of the inscription and some opposed it. King Albert and Herbert Hoover were opposed to the inscription and in the end the building was dedicated without it, on July 4, the only reminder of the World War being a bas-relief showing the burning of the old library.

During the summer King Albert and Queen Elizabeth made an extended visit to the Belgian Congo. See MILITARY PROGRESS.

BELL, JOHN KEBLE. English novelist and playwright, died at Bournemouth, England, March 29. He was born at Basingstoke, England, June 8, 1875, and was educated at Wantage and at Worcester College, Oxford. Beginning newspaper work at London on the staff of the Press Association, he became editor of *The Sketch*, 1902-04, and dramatic critic of the *Daily Mail*, 1904-08. He founded the Croydon Repertory Theatre in 1913. He wrote many plays and novels under the pen name, "Keble Howard." Among his plays are *Compromising Martha* (1906); *The Dramatist at Home* (1909); *The Girl Who Couldn't Die* (1911), *The Embarrassed Butler* (1912); *The Test Kiss* (1918); *The Smiths of Surbiton* (1922); *Lord Babs* (1925). His other publications and novels include: *The Chicot Papers* (1901); *Love and a Cottage* (1903); *The God in the Garden* (1904); *Love in June* (1905); *Bachelor Girls* (1905); *The Cheerful Knave* (1910); *One in the Family* (1911); *Merry-Andrew* (1915); *The Smiths in War-Time* (1918); *Puck and Mr. Purley* (1920); *The Fast Lady* (1925); *Paradise Island* (1926); *My Motley Life*, an autobiography (1927).

BELLOTT, bē'lō, HUGH HALE LEIGH. English lawyer and honorary secretary of the International Law Association, died while at the association's conference at Warsaw, August 11. Dr. Bellot was born Oct. 19, 1860, and attended Leamington College, later being graduated from Trinity College, Oxford. In 1890 he was called to the bar by the Inner Temple. He held the position of honorary secretary of the Grotius Society, and he was at one time acting professor of constitutional law at the University of London. He wrote many reviews and books. Among the latter are *Unconscionable Bargains with Moneylenders* (1897); *Bargains with Moneylenders* (1st ed. 1897, 2d ed. 1906); *The Inner and Middle Temple* (1902); *Commerce in War* (1907); *The Temple* (1914); *Pitt Cobbett's Leading Cases on International Law* (1922-24); *Foot's Private International Law* (1925, 5th ed.); and *Gray's Inn and Lincoln's Inn* (1925).

BENET, MRS. WILLIAM ROSE. See WYLIE, ELLINOR.

BENNETT, FLOYD. American aviator, died at Quebec, Canada, April 25. He was born at Warrensburg, N. Y., Oct. 25, 1890, and was educated at Lake George, N. Y. Early in life he became an automobile mechanic, leaving that occupation to enlist in the aviation corps, U. S. Navy, in 1917. During the World War he was an instructor in aviation mechanics at the naval base, Hampton Roads, Va. In 1922 he was transferred to Norfolk, Va., where he met Commander Richard E. Byrd, U.S.N., with whom the rest of his life was closely associated. Bennett was the pilot of the plane in which Byrd flew across the North Pole, and was chosen by Byrd as second in command of the projected flight to the South Pole

and return. Injuries prevented Bennett from accompanying Byrd on the transatlantic flight of the latter, but he had recovered from them when he flew from Detroit, Mich., to Lake St. Agnes, near Murray Bay, Que., in an attempt to aid the crew of the transatlantic flier, *Bremen*, stranded on Greenly Island. He was ill before the relief flight began, and he succumbed to pneumonia.

BEREA COLLEGE. A non-sectarian, coeducational institution at Berea, Ky., founded in 1855, and designed to serve the educational needs of the mountain people of the Southern Appalachian region. The enrollment for the autumn of 1928 was 1942, distributed as follows: College, 437; normal, 319; academy, 420; Foundation-Junior high school, 622; training school, 134. The enrollment in the summer session of 1928 was 453, of whom 191 were in the college, 167 in the normal school, and 95 in the academy. The faculty numbered 104, distributed as follows: College, 30; normal, 12; academy, 19; Foundation-Junior high school, 32; training school, 4; music, 8. The endowment amounted to \$8,894,739, and the income for the year ending June, 1928, was \$357,223. The library in 1928 contained 57,779 volumes. A science building, men's gymnasium, and animal husbandry building, were completed during the year. President, William J. Hutchins, D.D., LL.D.

BERKSHIRE FESTIVAL. See MUSIC.

BERMU'DA. A British colony in the West Indies consisting of a group of small islands lying about 580 miles from Cape Hatteras, N. C. About 20 of the islands are inhabited. Because of its picturesqueness and proximity to New York (677 miles), it is a favorite winter resort for American tourists, who in 1926 numbered 27,215. Area, 19.3 square miles; population, according to the census of 1921, 20,127 (7006 white). The estimated civil population in 1926 was 30,113. Statistics for commerce and finance follow:

	1925	1926
	£	£
Imports	1,325,041	1,404,824
Exports	166,020	239,553
Revenue	248,476	314,298
Expenditure	312,288	291,209

In 1925 the total tonnage of vessels entered and cleared was 2,749,780 tons of which 2,367,482 were British. The public debt in 1926 was £50,000. The chief products are potatoes, onions, lily bulbs, and various vegetables. The chief imports in 1926 were: Provisions, beef, bran, clothing, cotton goods, electrical goods; flour; hardware; fuel oil; and woolen goods. The chief exports are potatoes; onions; other vegetables; bulbs, and whisky. The administration is under a governor assisted by an executive council of seven members and a legislative council of nine members appointed by the King and an elected assembly of 36 members. Governor in 1928, Lieut.-Gen. Sir Louis Jean Bols.

BERRIES. See HORTICULTURE.

BERRY, HENRY SEYMOUR. See BUCKLAND, LORD.

BERRY, JOHN BENNINGTON. American engineer, died at Three Lakes, Wis., June 22. He was born at Paterson, N. J., Dec. 14, 1851, and was educated at the Brooklyn, N. Y., Polytechnic Institute. He entered railway service in 1874 as

an assistant engineer on the Chicago & Northwestern R. R., and advanced through various positions until he became chief engineer of the Union Pacific Railway, in 1893. In 1905 Mr. Berry left the Union Pacific to become chief engineer of the Chicago, Rock Island & Pacific Railway, and in 1914 he resigned from railway service to engage in consulting practice in Chicago. In 1905 he was appointed a member of the board of consulting engineers of the Isthmian Canal Commission. He wrote, in 1904, a monograph on railway-grade reduction considered an authoritative presentation of the matter.

BERTHONITE. See CHEMISTRY, under *Mineralogical Chemistry*.

BES'SARABIA. Formerly a government of the Russian Empire; joined to Rumania in March, 1918. See RUMANIA.

BIBLE LANDS. See ARCHEOLOGY.

BIBLE SOCIETY, AMERICAN. A society founded in 1816 which strives for a wider circulation of the Bible to all people, without denominational or racial discrimination. The Bibles are furnished at cost prices and distributed through the Society's home, foreign, and other agencies. In 1927 home agencies distributed 3,762,811 volumes; the foreign agencies, 4,879,674. The Society also supplied the Scriptures in 166 languages during the year, including editions in Roman and Gothic characters and embossed systems for the blind. The total issues of the Society in 112 years of service have been 194,063,757 volumes, of which 108,132,107 were distributed in the United States and 85,931,650 in foreign lands. The number of issues in the United States in 1927 was 5,755,251, of which 2112 were for the blind, and in other lands, 4,279,546, making a total of 10,034,797. Workers in the 10 home agencies totaled 927, of whom 412 were volunteers; workers in the 12 foreign agencies numbered 2542, 676 being volunteers.

The translation of the Bible into additional languages, and revision of existing versions, continued through the year. In the United States, progress was made in the revision of the Gospels in Yiddish, and four Gospels in Hopi; the reproduction of the Cherokee Scriptures, which was out of print, and the translation of the Scriptures into Acoma, spoken by Indians in New Mexico. In Latin America, progress was made in translation work in Quiché, Mam, and Cakchiquel, spoken in Guatemala; Peruvian Quechua and Bolivian Quechua, and Aymara, spoken in the upper Andes region. In Africa, the Bible was published in Luba-Lulua; and progress was made toward completing the New Testament in Luragoli and Gospels in Olunyore and in a revised Sheetswa New Testament. Steps were taken toward publishing the Gospels in Bakuese and in Shilluk. In Europe, the preparation of a Gospel in Bulgarian characters for the Gypsies was authorized. In the Far East, the Society shared in a new publication of a diglot Gospel of Matthew in Urdu and Arabic. In Siam, the Bible was completed in Lao or Tai Yuan, and work was going on in Tai Lu. In the Philippines, progress was reported on the revision of the New Testament in Tagalog, and portions in Samareño. In China, a tentative revised Canton Colloquial New Testament proved very popular, and additional work was done on the revision of the Suchau Colloquial.

The total receipts of the Society for the year from invested funds, gifts, sale of books, etc.,

amounted to \$1,060,809.48; its expenses were \$1,084,662.37. The Society was affiliated with 95 auxiliary Bible societies throughout the United States, which assisted in the circulation of the Scriptures and contributed for its expenses. In 1927 the contributions received from this source amounted to \$14,724.71. The officers in 1928 were: E. Francis Hyde, president; the Rev. Eric M. North, Ph.D., and the Rev. George William Brown, M.A., general secretaries; the Rev. Lewis B. Chamberlain, D.D., recording secretary; and Gilbert Darlington, treasurer. The official organ of the Society is the *Bible Society Record*. The headquarters of the American Bible Society are at the Bible House, Astor Place, New York City.

BIBLIOGRAPHY. See PHILOLOGY, MODERN. **BICKERSTAFFE-DREW, THE RIGHT REV. MONSIGNOR COUNT FRANCIS BROWNING DREW** (John Ayscough). English prelate of the Roman Catholic Church and novelist (nom de plume, John Ayscough), died at Salisbury, England, July 3. He was born at Headingley, Leeds, England, Feb. 11, 1858, and was educated at the King Edward VI school, Lichfield; at St. Chad's College, Denstone; at Oxford, and at the Seminary of St. Thomas, Hammersmith. He was ordained a priest in the Roman Catholic Church in 1884, and in 1886 became a chaplain in the British Army. His ecclesiastic career was spent entirely in the military service, and he was especially prominent in the World War, in which he held the rank of assistant principal chaplain royal. He was twice mentioned in dispatches in the first year of the War, and received later the Mons medal with two roses, the Victory medal, the General Service medal, and the Order of the British Empire. His honors from his church included a knighthood of the Sacred Military Order of the Holy Sepulchre and the title of count. Using his pen name, John Ayscough, Mgr. Bickerstaffe-Drew published more than twenty novels, a volume of impressions of America, and a book of reminiscences. Among his many novels are *Rosemary, Dromina, A Roman Tragedy*, and *A Prince in Petto*.

BICYCLING. See CYCLING.

BILLIARDS. Frank Taberski was the outstanding figure in the billiard world during 1928 due to his spectacular victory over Ralph Greenleaf in the final games of the world championship pocket-billiards tourney held in Chicago in December. Owing to a decision of the National Billiard Association that a disputed game of the regulation tourney must be replayed, it became necessary for Taberski not only to win this replay, which would mean a tie for the title, but also to capture the resulting play-off in order to gain the championship. This difficult feat Taberski performed, winning the two games by the scores of 125 to 97 and 125 to 41.

John Layton retained his world and national three-cushion titles, Willie Hoppe affording his chief opposition in both tourneys. Edouard Horemans of Belgium won the 18.2 balkline championship in a match with Jacob Schaefer contested at San Francisco. The usual amateur 18.2 title tourney was cancelled because of dissension among the Western players. Francis S. Appleby successfully defended his amateur 18.1 title in a tournament held in February. James Collins wrested the amateur pocket billiard honors from J. Howard Shoemaker.

BIOCHEMISTRY. See AGRICULTURAL EXPERIMENT STATIONS; CHEMISTRY.

BIOGRAPHY. See LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE, ETC.

BIOLOGICAL CHEMISTRY. See CHEMISTRY.

BIOLOGY. See ZOÖLOGY.

BIRDS. See ZOÖLOGY.

BIRTH RATE. See VITAL STATISTICS.

BISHOP, JOSEPH BUCKLIN. American journalist and author, died at New York, December 13. Born at Seekonk, Mass. (now East Providence, R. I.), Sept. 5, 1847, he was graduated from Brown University in 1870. Obtaining a position as a reporter on the New York *Tribune* in that year, he was soon placed on the editorial staff, where he remained until made an editorial writer on the New York *Evening Post* in 1883. He became, in 1900, chief of the editorial staff of the New York *Globe*. Appointed secretary of the Isthmian Canal Commission by President Roosevelt in 1905, he served as one of the earliest Federal information officials, editing the *Canal Record*, a weekly paper, and managing the publicity; he continued with the commission until the construction was completed, in 1914. Brown University conferred the Litt.D. degree on him in 1923. He edited *Theodore Roosevelt's Letters to his Children* (1919), and wrote: *Cheap Money Experiments* (1892); *Our Political Drama* (1904); *Issues of a New Epoch* (1904); *The Panama Gateway* (1913); *A Chronicle of One Hundred and Fifty Years* (1918); *Theodore Roosevelt and his Time, Shown in His Letters*, 2 vols. (1920); *Life of Charles J. Bonaparte* (1922); *Life of A. Barton Hepburn* (1923); and *Notes and Anecdotes of Many Years* (1925). At the time of his death Mr. Bishop was preparing a biography of George W. Goethals.

BITUMINOUS COAL STRIKE. See STRIKES AND LOCKOUTS.

BIXBY, WILLIAM HERBERT. American military engineer and retired brigadier general, U. S. Army, died at Washington, D. C., September 29. He was born at Charlestown, Mass., Dec. 27, 1849, and, after attending the Massachusetts Institute of Technology, 1866-67, he was appointed to the U. S. Military Academy, being graduated in 1873. He was commissioned second lieutenant in the Corps of Engineers, becoming assistant professor of engineering at West Point in 1875. He was sent to France in 1880 to observe manœuvres of European armies and inspect fortifications and other engineering works. He studied at the French École des Ponts et Chaussées and was graduated in 1881. On his return to the United States he had various assignments in connection with river and harbor improvements in the South until 1891, when for four years he was similarly engaged in New England, then was detailed to the Ohio River Basin, 1897-1901. He served as division engineer of Northwestern and Western United States, 1905-08, in the latter year being appointed president of the Mississippi River Commission, where he soon was recognized as a flood control expert. General Bixby became Chief of Engineers, U. S. Army, June 10, 1910, serving until Aug. 11, 1913, when he was retired. In 1912 he supervised the removal of the wreck of the U. S. S., *Maine*, from Havana Harbor. When the United States entered the World War in 1917, he returned to active service and for two years he was again presi-

dent of the Mississippi River Commission, and division engineer of the Western Division of River and Harbor Improvements. In 1912 he was president of the Congress of the International Association of Navigation Congresses held at Philadelphia, and in 1917 he was elected president of the American Society for Testing Materials.

BLACK TONGUE IN DOGS. See PELLAGRA.

BLASCO IBANEZ, bläs'kō ēbā'nyāth, VINCENTE. Spanish novelist, journalist, and politician, died at Mentone, France, January 28. He was born at Valencia, Spain, Jan. 29, 1867. He studied law in early manhood, but gave up his legal career for the pen and political agitation. He inherited a tendency toward radicalism; his father was the editor of a Republican paper, *El Pueblo*, in opposition to the monarchical régime in Spain. In his youth Ibañez was politically and philosophically turbulent, and was frequently arrested and condemned to imprisonment. Before 1913 he was recognized as being beyond dispute the head of the younger school of novelists in Spain, and he was called frequently "the successor of Hugo and Zola." Like the French novelists, he divided his time between his writing desk and the political pulpit, and, like them, he was fervid in his opposition to the régime in his own country. At first he directed his attacks against the Government of King Alfonso XIII. Later, when Primo de Rivera assumed power as the dictator of Spain, Ibañez turned his heavy guns upon the new system.

In the meantime, his fame as a writer grew. His novel, *La Barraca*, is a powerful and gripping tale, and if the books that succeeded it immediately were not considered its equal, still his art improved constantly. *La Catedral*, *El Intruso*, *La Bodéga*, and *La Maja Desnuda* were successful in the Spanish-speaking countries. In 1918 came the English translation of *The Four Horsemen of the Apocalypse*, dealing with the World War and containing bitter attacks on the Germans. It was extraordinarily popular in the English-speaking world, and may be said to have made Ibañez a figure of world-wide prominence. The motion picture made from the book also carried the world by storm. The story brought in its train, necessarily, English translations of other Ibañez books, but none of them attained its vogue. However, *Mare Nostrum*, both book and film play, dealing with the naval and submarine aspects of the War, added to the fame and the coffers of Ibañez. His *Blood and Sand*, treating of the bull ring, was very successful on the screen. Other works that were done into English were *Torrent* (1923) and *The Temptress*. There is fairly general agreement among critics, however, that the works of Ibañez, temporarily popular, are not permanent literature.

From the Autumn of 1924 until his death Ibañez, who had traveled extensively and had visited the United States, found it expedient to live at Mentone, France; the virulence of his attacks on the Government gave ground for belief that his liberty, if not his life, would be endangered by continued residence in his native country.

BLEIBTREU, blīp'troi, CARL. German poet, critic and dramatist, died at Zurich, January 30. Born at Berlin, Jan. 13, 1859, the son of Georg Bleibtreu, the painter, he studied at Berlin and at London. After doing editorial work

for several years, he published an essay, *Revolution der Literatur* (1886), which, with its praise of the modern school of writing, marked him as a leader of the naturalists. His later books increased his reputation, and he and Friedrich Nietzsche were considered leaders in the modernistic development of German literature. He wrote forcefully on a variety of subjects, stressing his own personality. Although he did certain passages exceptionally well, such as descriptions of battle scenes, many critics consider that he never wrote an artistically balanced book. He was one of the founders of the Freie Bühne, 1889, modeled after the Paris theatre, and a student of Shakespeare. *Dies Irae, Erinnerungen eines französischen Offiziers an Sedan* (1884), was one of his earliest books. His novels include: *Schlechte Gesellschaft* (1885); and *Grössenwahn* (1888). He also wrote plays, notably: *Lord Byron* (1886); *Karma*; and *Weltgericht*. His *Geschichte der englischen Literatur*, first published in 1885, was issued in a revised edition in 1923, and in 1890 he published *Kosmische Lieder*. His more important histories and military books are *Geschichte und Geist der europäischen Kriege unter Friedrich den Grossen und Napoleon* (1892); *Zur Geschichte der Taktik und Strategie* (1897); *Geschichte der deutschen Literatur* (1911); *England Waterlooölge* (1915); and *Stegemanns Weltkrieg und die Marneschlacht* (1916).

BLIND, SCHOOLS FOR. See EDUCATION.

BLINN, HOLBROOK. American actor and producer of plays, died at Croton-on-Hudson, N. Y., June 24. He was born at San Francisco, Calif., Jan. 23, 1872, and after studying at Stanford University made his professional debut in *The New South*, at San Francisco. He appeared first at New York in the same play in 1893. Later he returned to California, organized his own company, and took it to Alaska. In 1897 he went to London to appear in *The Cat and the Cherub*, in which he had played in New York. He achieved popularity in England, and remained there nine years, with brief visits to the United States. In 1920 he originated the part of Pancho Lopez, in *The Bad Man*, his greatest success, and he appeared in this play at New York and on tour for three years. In 1923-24 he appeared in moving pictures, and returned to the stage to star in *The Dore*, 1925-26. Mr. Blinn was also active as a producer of plays and as head of the Actors' Fidelity League.

BLISTER RUST. See BOTANY, under PLANT DISEASES; also FORESTRY.

BLOCK SIGNALS. See RAILWAY ACCIDENTS; RAILWAYS.

BLOOMFIELD, MAURICE. American philologist and Sanskrit scholar, died at San Francisco, June 12. He was born at Bielitz, Austrian Silesia, Feb. 23, 1855, went to America as a boy, and studied at the University of Chicago, Furman University, Yale, and Johns Hopkins, receiving his Ph.D. from the last-named institution in 1879. He was made a fellow of Johns Hopkins, 1878-79, and then studied at Berlin and Leipzig, 1879-91. On his return to America in 1881 he received an associate professorship at Johns Hopkins, and afterward was appointed to the chair of Sanskrit and comparative philology, which he held until his retirement in 1926. He received the degree of LL.D. from Princeton University in 1896 and from Furman University in 1908; that of L.H.D. from the University of

Chicago in 1916, and was made a doctor of the University of Padua, Italy, *honoris causa*, in 1922. The Royal Academy of Sciences of Munich, Bavaria, conferred on Dr. Bloomfield the Hardy Prize in 1908. He was a member and an officer of many learned societies. He wrote, besides numerous papers for journals and reviews, the following: *The Atharva-Veda* (1899); *Cerberus, the Dog of Hades* (1905); *A Concordance of the Vedas* (1906); *The Religion of the Veda* (1908); *Rig-Veda Repetitions* (2 vols., 1916); *Life and Stories of the Jaina Savior Parvvanatha*. He edited for the first time, from original Sanskrit manuscript, the *Grihyasamgraha* of Gobhila-putra, and the *Sutra of Kaṇḍika*, translated the *Atharva-Veda* for the *Sacred Books of the East* (edited by Max Müller), and edited, with Prof. Richard Garbe of the University of Tübingen, the *Kashmirian, or Paippalada Veda* (1901).

BLUE, VICTOR. Rear admiral, U. S. N., retired, died near Lannin, S. C., January 22. He was born in Richmond County, North Carolina, Dec. 6, 1865. He was graduated from the U. S. Naval Academy in 1887. In 1898, the year of the Spanish-American War, he was serving on the *Suwanee*, stationed off Santiago, Cuba, with the rest of the American fleet that was blockading Admiral Cervera's ships. Blue's exploit in going ashore and ascertaining the number and positions of the Spanish vessels made him famous and won for him advancement and a medal. He was promoted through the various grades until he reached the rank of the rear admiral Apr. 1, 1919, and he retired July 11, 1919. In the World War he commanded the battleship, *Texas*, under Admiral Beatty, in the North Sea. For his services in the War he received the Distinguished Service Medal and the decoration of the Belgian Order of Leopold. Before the War he had been chief of the Bureau of Navigation, U. S. N., and he was reappointed to the same post in December, 1918.

BOGDANOFF, ALEXANDER ALEXANDROVITCH. Russian scientist, died at Moscow, April 8. His real name was Malinovski. He was educated as a physician and began practice at Moscow, but soon became active in the dissemination of liberal political ideas. He was exiled to Vologda for three years, and then left Russia. During the revolution of 1905 he was again active in Russia and after the failure of the movement went abroad again with Lenin, Lunatcharsky, and others. He was at variance with some of the ideas of Lenin, and in 1923 was arrested for opposition to the "new economic policy" of the Russian leader. He was later released, and was appointed to the directorship of the State Scientific Institute for Blood Transfusion. He died from the effects of an experiment made upon himself.

BOHE'MIA. A constituent member of the state of Czechoslovakia since the defeat of the Central Powers in 1918; formerly a crownland of Austria; situated in the northwestern part of the former Austro-Hungarian Empire, with Saxony and Silesia on the north, Moravia on the east, and Lower and Upper Austria on the south. Area, including the small Austrian and German territories which were added by the peace treaty to Czechoslovakia, 20,102 square miles; population, Feb. 15, 1921, 6,670,582. Bohemia is represented in the Czechoslovak legislature by nine deputies and five senators. See CZECHOSLOVAKIA.

BOHNKE, EMIL. A distinguished German conductor, died in Berlin, April 10. He was born at Zdunska Wola, Poland, Oct. 11, 1888, but studied at the Leipzig Conservatory under Sitt and Krehl, and at the Akademische Meisterschule in Berlin. For two years he taught at Stern's Conservatory and played the viola in the Bandler Quartet, and later in the Busch Quartet. From 1922 until his death he was conductor of the Berlin Symphony Orchestra. As a composer he attracted attention with a *Symphonic Overture*, *Theme and Variations* for orchestras, a *Violin Concerto* in D, a *String-Quartet* in C minor, a violin-sonata, a cello-sonata, and pieces for piano.

BOILERS. The trend toward larger steam boiler units, so apparent for several years prior to 1928, continued. Boilers rated at over 800,000 pounds of steam per hour were being built and it was confidently expected that these would be able, under forcing, to produce over a million pounds of steam per hour. These units were to go into the East River Station of the New York Edison Co. Furthermore, it was possible under very high rates of steaming to maintain efficiencies of 90 per cent and over. The record to the end of 1928 was slightly over 93 per cent.

Heat releases in stationary practice up to 50,000 B.t.u. per cubic foot of furnace volume were attained during the year and 30,000 to 40,000 B.t.u. were not unusual. Sustained high furnace temperatures were made possible through the use of large furnaces surrounded completely with water walls or a combination of water walls and refractory surfaces. The water walls, by withstanding better the slagging action of the ash, reduce furnace maintenance. They also absorb the large quantities of radiant heat. In some cases the high rates of heat absorption with the resulting high steam and water velocities within these walls has caused circulation difficulties with consequent burning of the water-wall tubes. Altered designs were overcoming this difficulty.

Although about half the water-tube boilers being built had some form of water walls, the air-cooled walls were being employed extensively where the boilers are not forced at such high rates. The heat from these walls goes to preheat combustion air and where powdered coal with unit mills is employed this heated air dries the coal within the mill.

The general employment of bled steam from the turbine to heat the feed water and the higher exit temperatures of the gases leaving the boiler have led to more extensive use of air preheaters to utilize the heat in the uptake gases. In some cases these air preheaters were installed in series with an economizer. Recently a new type, the steaming economizer, had been introduced which is located below the boiler water level with the water flow upward. The use of water walls, air preheaters, and economizers has made necessary a complete reapportioning of heating surface of the steam generating unit, with the result that there is a tendency to place less surface in the boiler proper. It is now common to find twice as much surface in the preheater as in the boiler.

High rates of steaming and high pressures have made it necessary to have as nearly pure feed water as possible. This has led to a more extensive use of evaporators for supplying make-supplied by steam bled from the turbines. Also in some industrial plants where steam is exhausted up water to boiler feed. These evaporators are

ed or bled for process, the returns are likely to become contaminated; hence not suitable for boiler feed. Therefore, in order to minimize the raw water makeup for boiler feed, the bled or exhaust steam is led to an evaporator which produces low-pressure steam for process and the clean condensate from the higher pressure side goes back to the boiler.

For pulverized coal, the slagging type of furnace introduced about two years previously had proved a satisfactory method of disposing of the ash. In this the ash is maintained in a molten state in the furnace well and tapped out daily. A system of water jets cools and shatters the slag which is then sluiced away to a fill. This system was being employed at the Charles R. Huntly Station at Buffalo and at the Toronto Station. It is applicable where the firing temperature of the ash is not too high. Hydraulic sluicing of ash was also extensively employed with the regular type of furnace.

More than half the ash with pulverized coal goes up the stack in a very fine state. This presented a vexing problem in some localities. Various means of arresting this ash were being employed, including electrical precipitation, cyclone separators, and specially constructed exhaust fans. Wear on the blades of the latter necessitated employment of special metals such as stellite for the fan blades.

With high-pressure boilers 700 pounds was considered about the limit in which riveted drums could be employed owing to the difficulty of handling the necessarily thick plates. Above this, forged drums were used. The largest of these to the end of 1928 were the 1400-pound drums built for the boilers at the Deepwater Station near Wilmington. These drums are 50 feet, 3 inches long, 52 inches inside diameter, and have walls 4 inches thick. Steel containing a small amount of manganese (0.30 to 0.45 per cent) is employed.

For further discussion of high steam pressures, see STEAM POWER PLANTS, STEAM.

Automatic combustion control of boilers was more extensively applied during the year not alone on the boilers of large central stations but in many industrial plants as well.

An entirely new design of mercury boiler went into operation at the South Meadow Station of the Hartford Electric Light Company during the latter part of 1928. This was a unit supplying a 10,000-kilowatt mercury turbine and embodied refinements found necessary by experience with the earlier and smaller unit at the Dutch Point plant of the same company.

Three different companies were carrying on experiments with diphenyl as a substitute for mercury in the binary cycle for the production of steam. No conclusive results were available.

BOKANOWSKI, MAURICE. French lawyer and minister of commerce and aviation, was killed in an airplane accident September 2, near Toul, France. He was born at Havre, Aug. 31, 1879. Having studied law and been admitted to the Paris bar, he practiced at the court of Appeals, at the same time taking an active interest in politics. In 1914 he was elected deputy of the Seine. During the World War he served in the French Army and was decorated with the Legion of Honor and the Croix de Guerre. After the War he recommenced his political activities, being again elected to the Chamber of Deputies in 1919, where he distinguished

himself as reporter of the Budget Commission. M. Bokanowski, who belonged to the Bloc National and was an ardent supporter of Poincaré, was appointed Minister of the Navy in the Premier's spring cabinet of 1924. In September of the following year he came to Washington, D. C., with Caillaux, as a member of the debt settlement commission. When Poincaré resumed his position at the head of the Government in 1926, he appointed M. Bokanowski Minister of Commerce and Aviation, in which office he had acted until his death, having made plans for a commercial air service between France and Africa and South America. He visited the United States in 1927 as guest of the American Bar Association, to advocate Briand's plan for the outlawing of war.

BOKHARA, bo-ká'rá. A state in Central Asia, formerly a dependency of the Russian Empire, later known as the Bokharan People's Republic, and since February, 1925, a part of the Soviet Socialist Republic of Uzbek. It is bounded on the north by the Russian provinces of Samarkand and Syr-Daria; on the south by Afghanistan; on the southwest by Transcaucasia and Khiva; and on the east by Ferghana. Estimated area, 79,000 square miles; estimated population, 3,000,000. The chief towns with their estimated populations are Bokhara, 75,000, and Karshi, 25,000. The religion is chiefly Mohammedan. The chief products of Bokhara are corn, fruit, silk, tobacco, cotton, hemp, and farm animals; and the chief minerals are gold, salt, alum, and sulphur. The trade is mainly with India to which raw silk is exported and from which tea, indigo, Dacca muslin, etc., are imported. By the revolution of Aug. 30, 1919, the Amir was dethroned and the Soviet Government was set up, which formed a military and political agreement with Russia. In February, 1925, Bokhara and Khiva were joined together to form the Soviet Socialist Republic of Uzbek.

BOLIVIA. A South American republic situated in the interior and bounded by Brazil on the east and Chile on the west. Sucre is the seat of the supreme court and is historically regarded as the capital, but the actual seat of the government and the largest city is La Paz.

AREA AND POPULATION. Estimated figures for the area and population of Bolivia, place the latter at 2,599,000, as against 1,796,500, the population shown by the official census, taken in the latter part of 1900. The area of the Republic is given as 787,000 square miles. In 1926 the estimated population of La Paz was 109,750. Other large towns with their estimated populations were: Cochabamba, 31,500; Potosi, 30,700; Sucre, 30,200; Oruro, 32,200; and Santa Cruz, 26,500.

EDUCATION. Elementary education is free and compulsory and is under the care of the municipalities and the state. In 1926 there were 1598 elementary schools with 2765 teachers and 79,973 pupils. For secondary education there were 27 colleges (17 national), 5 church institutions, and 5 private schools with 403 teachers and 4213 students. For special instruction there were 22 establishments with 177 teachers and 1913 students. At Sucre and La Paz are the only two universities which possess more than one faculty. There are also a number of training colleges for teachers.

PRODUCTION AND COMMERCE. The outstanding features of Bolivian economic life are the enor-

mous preponderance of the mining industry, and the striking inadequacy of the transportation system, owing to the great geographical and topographical difficulties which beset road building in the republic. Mineral exports, consisting chiefly of tin, have constituted over 90 per cent of Bolivia's total exports since 1920. The tin industry is comparatively recent, and was established during the last century when declining silver production focused attention upon the tin deposits as a source of revenue. The price of tin is the barometer of Bolivian prosperity, notwithstanding the fact that other minerals, notably silver, gold, lead, bismuth, zinc, antimony, tungsten, and nickel are also produced. Of these, antimony is of particular potential interest in view of its position as a possible check on world antimony prices, Bolivia being the chief source of supply outside of China. The production of lead has shown a considerable increase owing to the greater demands for this metal in the automobile, radio, and cable industries.

Agriculture is relatively unimportant and cultivation methods have improved but little since primitive times. Rubber was at one time one of Bolivia's chief exports, but the demand has fallen with increasing development of the East Indian product. Oil is found in various parts of the Republic but is undeveloped. Forest resources are abundant but the lack of transportation facilities and the fact that the natural river systems flow away from the Pacific coast prevent any marked exploitation. Coal is too costly for general use, native fuels are poor and the vast potential hydro-electric resources lie undeveloped. This lack of fuel has been a sharp deterrent to the establishment of various industries, notably smelters and refineries.

The purchasing power of the country is extremely limited; the population, predominantly Indian and mestizo, has a small earning capacity. The Indians buy few imported goods. It is estimated that not over 10,000 families have incomes exceeding \$1800 a year and that less than 100 families have incomes exceeding \$15,000.

The total value of all exports in 1927 was \$43,704,000 of which \$3,665,000 went to the United States. The minerals comprised 92.6 per cent of all the exports. Among the more important minerals were: Tin, 33,858 long tons valued at \$33,649,000; lead, 25,003 short tons valued at \$1,651,000; copper, 7850 short tons valued at \$1,676,000; silver, 5,403,000 troy ounces valued at \$3,063,000. The rubber exports consisted of 8,517,000 pounds valued at \$1,765,000.

The total value of all imports in 1927 was \$22,733,000, of which \$6,561,000 represents the share of the United States. Great Britain, Germany, and France were the next in importance as sources of origin for imports. In 1914 Bolivia, cut off from England, its principal export market, diverted its trade to the United States; and in 1927, although it had regained its export market in England, it purchased 28.9 per cent of its requirements in the United States, as against 19 per cent from England. Germany has never recovered its pre-war position in the Bolivian import trade, but France has made a slight gain.

FINANCE. The national budget for 1928 was approved in the following form: Receipts, 51,-

897,187 bolivianos; expenditures, 55,802,973 bolivianos; deficit, 3,905,786 bolivianos. In order to cover the deficit, the president was authorized to make reductions not exceeding 15 per cent in all branches of the Government. The expenditures were divided as follows: Legislative power, 796,122 bolivianos; foreign relations, 1,050,010; worship, 164,840; government, 2,575,570; justice, 2,080,242; treasury, 2,498,005; industry, 521,245; public debt, 25,823,545; promotion, 1,152,367; communications, 2,237,221; education, 5,000,411; agriculture, 199,520; war, 10,939,760; colonization, 764,114. The total public debt of Bolivia on June 30, 1927, was 172,544,762 bolivianos, distributed as follows: External debt, 132,176,501 bolivianos; internal debt, 22,065,683 bolivianos; floating debt, 18,302,578 bolivianos. Naturally these figures do not include a loan of \$23,000,000 floated in September, 1928, which, however, was largely for refunding purposes.

In April, 1928, the Bolivian Senate, after slight amendments, approved the three financial bills laid before the Government by the Kemmerer Financial Mission (consult preceding YEAR BOOK), and which had already been passed by the Chamber of Deputies. The first law provides for a tax on real estate; the second provides for the establishment of a national company for revenue collection; and the third provides for taxes on certain kinds of income.

COMMUNICATIONS. As noted above the transportation system of Bolivia is the chief hindrance in the way of greater economic exploitation. The length of railways at the end of 1926 was 1244 miles and the length of highway at the end of 1927 was 1125 miles. In 1927 there were 7150 miles of telegraph wire and 3589 miles of telephone wire; in 1928 there were 1985 automobiles registered.

In accordance with the treaty signed on Oct. 20, 1904, by the diplomatic representatives of Chile and Bolivia, the Bolivian section of the Arica-Alto de la Paz Railway was turned over to Bolivia on May 13, 1928. The railway, a daring and impressive work of engineering which surmounts the Andes, was built by an English company, which began work in 1909 and concluded its task in four years at a total cost of £4,063,561 for 446 kilometers on Chilean soil, and £1,105,000 for the 240 kilometers on Bolivian territory. During the 15 years since its completion the railroad has carried 1,500,000 tons of freight. Chile was to continue to manage the Bolivian section until certain arrangements could be made, the revenue being divided 60 per cent to Chile, and 40 per cent to Bolivia.

On May 19, 1928, the ceremony initiating the work for the construction of the Cochabamba-Santa Cruz Railway was presided over by President Siles. Upon completion, this railway was to connect the productive regions of the highlands with the Bolivian Orient of great agricultural wealth.

GOVERNMENT. The President, who is elected by direct popular vote and is ineligible for reelection, is the head of the executive department, and is aided by a cabinet of six members, each in charge of a separate department. Legislative power is vested in a congress of two chambers, the senate of 16 members elected for six years, and the chamber of deputies of 75 members elected for four years. One-third of

the senate and one-half of the chamber retire every two years. President in 1928, Dr. Hernando Siles, assumed office Jan. 10, 1926, for the period 1926-1930.

HISTORY. Bolivia passed through a rather eventful year, both as far as internal conditions were concerned and in her relations with her neighbors, particularly Paraguay. In the early part of the year there was a political plot involving many members of the Senate and Chamber of Deputies to overthrow the government of President Siles. Before the plot could come to a head, agents of the President unearthed it and many of the leaders were arrested and exiled. The only concrete result of the movement was the reorganization of the president's cabinet, which formed as follows: Foreign Affairs, Dr. Tomás Manuel Elío; Government and Justice, Minor Gainsborg; Treasury, Adolfo Costa; Interior and Communications, Carlos Romero; Public Instruction and Agriculture, Félix A. del Granado; and War and Colonization, Dr. Felipe Guzmán.

The outstanding feature of Bolivia's history during the year, was, of course, her break with Paraguay in December, because of the failure to settle the boundary dispute between the two countries. The boundary dispute was of more than 100 years standing between the two countries and involved an area of approximately 100,000 square miles in the very heart of South America. Strange to say, the territory in dispute has not much of an economic value, being very swampy and almost inaccessible. During the year the two countries were apparently making a sincere effort to settle the matter by arbitration. Reports were published from time to time in the press to the effect that the mixed boundary commission in Buenos Aires was unable to agree on any working basis because of incomplete instructions from the two governments involved.

In the meantime reports were also rife that both sides were arming and were prepared to settle the matter on the battlefield. Although these rumors were stoutly denied, there seemed to be some truth in them at least as far as Bolivia was concerned. The matter came to a head in the form of a serious crisis when there was a clash between the armed forces of the two countries on December 6. The press reported that Paraguayan soldiers fired on some Bolivian soldiers who were discovered building a fort in the disputed territory. Intense excitement immediately prevailed throughout the two countries and the rest of the world was disturbed by the war clouds which were hanging so obviously and ominously over the horizon of South America. On December 8, Bolivia severed diplomatic relations with Paraguay and a decree issued by President Siles suspended the municipal elections which were to be held on the next day in light of the international complications. The capital, La Paz, seethed with patriotic demonstrations and war was imminent.

Fortunately the Washington Pan-American Conference was in session and took immediate action by the appointment of a commission by Mr. Kellogg. The League of Nations also acted through Aristide Briand, who cabled to each of the countries involved to the effect that the League's Council did not believe that the incident would be allowed to become serious.

These efforts toward achieving peace did not seem, at first, to be of much value. Both coun-

tries withdrew from the Washington Conference and intimated that the time for arbitration had passed. The League of Nations merely marked time because of the provision in the Covenant which forbids interference wherever the Monroe Doctrine is concerned. The only hope appeared to rest with the Pan-American Conference at Washington. This body offered its good offices through the committee whose appointment was noted above. On the last day of the year it was announced that Bolivia had agreed to accept in principle the protocol of conciliation which she had been asked to by the Washington Conference. Five countries were asked to appoint members of a commission of investigation to look into the Chaco boundary dispute. They were Argentina, Brazil, Cuba, Uruguay, and the United States.

As Paraguay had previously taken steps to accept the protocol of conciliation, the year closed with the war clouds considerably cleared up. By signing the protocol, it was expected that both countries would pledge themselves to cease warlike measures until the matter is settled satisfactorily to both sides. There seemed to be a bit of dissension as to the scope of the investigating commission. Bolivia wished it to limit its study to the attack on Fort Vanguardia on December 6, while Paraguay wanted it to cover a much broader scope and to go into all recent incidents and fix the responsibility therefor. Nevertheless, hope was bright for a settlement of the controversy.

BOLL WEEVIL, BOLL WORM. See **COTTON**; **ENTOMOLOGY**, **ECONOMIC**.

BONE, JOHN RAINSFORD. Canadian journalist, died at Toronto, Ont., June 7. He was born in Huron County, Ontario, in 1877, and was graduated from Toronto University in 1899. In the following year he became a member of the editorial staff of the *Star*, of Toronto, advancing to the post of assistant managing editor in 1906 and to that of managing editor in 1907. He was a past president of the Canadian Press Association.

BOOTLEGGING. See **PROHIBITION**.

BOOTS AND SHOES. Although production in the boot and shoe industry started the year on a reduced basis, output increased towards spring and early summer, and about August 1 there was a noticeable improvement which continued until late autumn, when price reduction had an unsettling effect. The situation at the end of the year was characterized by more settled conditions, with firmer markets in all lines, and indications for broader operations in 1929. Prices were necessarily in line with higher hide and leather markets, while handicaps in the movement of retail stocks earlier in the year were the late spring and some resistance to prices by manufacturers. See **LEATHER**.

According to the U. S. Department of Commerce a total production of 344,350,724 pairs of boots and shoes other than rubber was reported for the year 1928, or an increase of less than 1 per cent over the production for 1927, namely 343,605,905 pairs, and to be compared with 324,513,595 pairs for 1926. The output of women's leather boots and shoes increased 6.4 per cent; athletic and sporting shoes (principally men's), 4 per cent; shoes with satin, canvas, and other fabric uppers (principally women's), 13.9 per cent; and slippers for house wear, 8 per cent. There was a decrease of 4.6 per cent in men's leather boots and shoes; 4.9 per cent in boys and youths' shoes; 6.3 per cent in misses and

children's shoes; 2.9 per cent in infants' footwear. The table below indicates the distribution of the production as compared with 1927.

UNITED STATES PRODUCTION OF BOOTS AND SHOES

Kind	Number of pairs	
	1928	1927
Boots and shoes, total	344,350,724	343,605,905
High and low cut (leather), total	298,724,547	300,007,772
Men's	90,969,621	95,328,098
Boys' and youths'	23,031,757	24,229,296
Women's	123,752,653	116,253,866
Misses' and children's	37,135,374	39,648,961
Infants'	23,885,142	24,541,551
Athletic and sporting (leather)	1,547,064	1,488,215 ^a
Satin, canvas, and other fabric ^b	3,760,069	3,301,433
Slippers for house wear, total	31,483,157	29,158,122
All leather	6,825,897	5,085,294
Part leather, felt, etc.	24,657,260	24,072,828
Moccasins	1,253,198	(^c)
Barefoot sandals and play shoes	5,682,099	(^c)
All other footwear	1,900,590	9,650,363

^a Revised.

^b Excludes footwear with rubber soles.

^c Included with "All other footwear."

As usual Massachusetts occupied first rank as a producer with a total output of 83,310,625 pairs; followed by New York with 74,800,641 pairs; Missouri with 46,060,389 pairs; Illinois with 25,246,250 pairs; New Hampshire with 21,499,436 pairs; Maine with 17,069,770 pairs; Wisconsin with 17,058,663 pairs; Pennsylvania with 16,662,134 pairs; Ohio with 15,324,137 pairs; and all other States with 27,318,679 pairs.

In 1928 there was an increase over 1927 of the number of shoes imported into the United States and a decrease in the number exported. The imports were as follows: all-leather boots and shoes, 2,616,884 pairs valued at \$8,254,224 in 1928, compared with 1,477,435 pairs valued at \$5,199,656 in 1927, an increase of 77.1 per cent; all-leather slippers, 633,998 pairs, valued at \$1,019,435, compared with 460,073 pair valued at \$407,407 in 1927; and other footwear, 1,170,953 pair valued at \$316,193, as compared with 1,066,331 pair valued at \$311,303 in 1927. Fewer shoes of certain types were exported from the United States in 1928 than in the previous year, the exports being men's and boys', 1,870,493 pair valued at \$5,796,517 in 1928, as compared with 2,477,117 pair valued at \$7,042,886 in 1927; children's 666,435 pair valued at \$750,199, as against 1,139,479 pair valued at \$1,170,255; and athletic shoes, leggins, and other footwear, 62,555 pair valued at \$93,964, as compared with 73,619 pair valued at \$113,864. The value, however, of women's shoes and slippers exported increased; 1,783,342 pair of women's shoes valued at \$4,309,877 were exported in 1928, compared with 1,897,478 pair valued at \$4,276,939 in 1927; and 361,500 pair of slippers valued at \$392,099, compared with 281,560 pair valued \$295,924. These figures are of interest because, during 1928, the leaders of the shoe industry urged increased tariff protection.

BOR'NEO. An island in the Malay Archipelago. See **BRITISH NORTH BORNEO**, **BRUNEL**, **SARAWAK**, and **DUTCH EAST INDIES**.

BOS'NIA AND HERZEGOVINA, hër'tsã-gö-vë-na. Formerly provinces in the Turkish Empire; now provinces of the newly established State of Jugo-Slavia. In 1908 control over them was acquired by the Austro-Hungarian Empire.

In 1918 after the collapse of this empire they were turned over to Jugo-Slavia. Area, 19,768 square miles; population, according to the census of Jan. 31, 1921, 1,889,929. See JUGO-SLAVIA.

BOSTON MUSEUM OF FINE ARTS. See ART MUSEUMS.

BOSTON UNIVERSITY. A non-sectarian institution of higher education at Boston, Mass., founded in 1869. The enrollment for the autumn term of 1928 was 12,234, distributed as follows: College of liberal arts, 867; college of business administration, 3778; college and extension courses, 918; college of practical arts, 915; college of music (new in 1928), 148; school of theology, 260; school of law, 569; school of medicine, 216; school of education, 2155; school of religious education, 471; graduate school, 562. Of the total registration, 8250 were full-time students working for degrees, and 3714 part-time, special students. The summer session enrollment was 10,084, of whom 5072 were men, and 5012 women. The faculty members numbered 463 in the autumn of 1928, administrative officers, 212, and trustees and council members, 65. In the eight libraries of the University there were 150,000 volumes, the liberal arts library, alone, containing 42,154. Among the important gifts received during the year was a 24-acre recreation centre at Riverside, in suburban Boston, from William E. Nickerson. Nickerson Field was developed and includes a football gridiron; baseball diamond; archery field; girls' hockey field; 12 tennis courts; running tracks; a boathouse with free canoes for students, and facilities for student dances; a field house for visiting teams; club rooms; ice-hockey rinks and toboggan chutes. The productive funds of the University exceeded \$3,000,000. President, Daniel L. Marsh, S.T.D., LL.D., Litt.D.

BOTANY. The eighty-fifth annual meeting of the American Association for the Advancement of Science was held in New York City, Dec. 26 to 31, 1928, with about 45 affiliated societies. Botany was represented in the meetings of Section G and in more than a dozen of the affiliated societies. The British Association for the Advancement of Science met at Glasgow, September 5 to 12; the French Association at LaRochelle, July 23 to 28, and the Swiss Society of Natural Sciences at Lausanne, August 30 to September 2. The Southwestern Division of the American Association for the Advancement of Science met at Flagstaff, Arizona, April 23 to 26. The Pacific Section of the American Botanical Society and the Pacific Division of the American Phytopathological Society met at Pomona College, Claremont, California, June 13 to 16, 1928. Botanical papers were presented at all of these meetings.

PHYSIOLOGICAL STUDIES. Baly, in an address before the Royal Institution of Great Britain, described experiments conducted in his laboratory on the synthesis of carbohydrates from carbon dioxide (*Science*, 1928, p. 364). A large surface of a specially prepared aluminum hydroxide in an aqueous suspension was submitted to visible light in the presence of carbon dioxide with the result that a photosynthetic syrup was formed that is considered to be a mixture containing glucose or fructose, or possibly both. Other more complex carbohydrates were formed that were readily reduced to simple sugars by the action of dilute acids. When equal areas of living leaves and areas of the suspended metals in glass vessels were compared, the quantities of carbohy-

drates synthesized were equal. Armstrong also reported that Pictet and Vogel had accomplished the synthesis of cane sugar in their laboratory (*Nature*, 1928, p. 578). This would indicate progress in our knowledge as to how the plant builds up its body from inorganic materials.

It had been claimed that, by increasing the amount of carbon dioxide in the air, plant growth would be stimulated, and experiments by Bolas and Henderson show that the growth of cucumber plants was increased by the artificial enrichment of the air with carbon dioxide. Willaman and Beaumont found that the respiration of dormant buds, tubers, and seeds was not increased with the increase in carbon dioxide unless the plant material was aspirated. When this was done there was a marked increase in respiration. Meyer and Plantefol claimed that the respiration of plants was not influenced by increasing the carbon dioxide of the air to 5 per cent. There was a decided reduction of respiration if the water content was lowered, and it was concluded that chlorophyll assimilation is more closely correlated with imbibition than with respiration. While most plants apparently require oxygen in their photosynthetic activities, Harvey claimed that certain marine algae can carry on their activities in complete absence of oxygen if kept in an atmosphere of carbon dioxide and illuminated (*Pl. Physiol.*, 1928, p. 85).

Investigators in many lands confirmed the general conclusions of Garner and Allard regarding the effect of length of daily illumination on the growth of plants and their flower production (*YEAR BOOK*, 1920, p. 93). In general, all green plants appear to have optimum requirements of light for their growth and reproduction. Experiments by Lubimenko and Szeglova (*Rev. Gen. Bot.*, 1928, p. 490) indicated that shortening the photoperiod reduced the formation of carbohydrates and consequently the vegetative growth. Lengthening the period of illumination resulted in prolonged vegetation and reduced reproduction. Intensity of light was found more necessary for flowering and fruiting than for growth and increase in dry weight, and from the results of their experiments it is concluded that some other factor than length of day may be involved in fruiting. They found in their experiments, which were carried on at Leningrad, that for normal growth tropical plants require a short photoperiod, temperate zone plants, one of from 9 to 18 hours, and subarctic plants, the longest period available. The physiological differences between short- and long-day plants are held to be due to differences in the relative rates of oxidation (respiration) and reduction or photosynthesis.

Tincher, in recent work, found that the shortening of the length of day from the normal period resulted in reduced stem elongation and retarded flowering. He considers the length of day factor governs the utilization of the carbohydrates made by the plants, hence influences stem elongation and the carbon-nitrogen ratio in the body of the plant (*Ann. Bot.*, 1928, p. 101).

Some recent experiments carried on by the U. S. Department of Agriculture with long- and short-day plants receiving 12 hours of illumination that were broken into alternate periods of light and darkness showed that as the length of the periods of equal light and darkness was progressively shortened, growth was reduced until the alternating periods were about 1 minute

in duration. When further reductions were made, growth was increased, and when the intervals were only five seconds, normal growth was restored. All plants behaved as though exposed to a long day.

An almost revolutionary change was made in the belief that only about a dozen chemical elements are required by plants. Numerous elements often found in plant tissues and formerly believed to be more or less accidentally present are now considered essential for plant growth and development. Just how minute quantities of these substances affect plant growth is not definitely known. Bishop claimed that within limits manganese has a beneficial effect on plant growth, due, he believes, to some relation between the presence of manganese and carbon assimilation (*Brit. Chm. Abstrs.*, 1928, p. 1060). Kleinstuck thought that manganese in plants acts as a catalyst. Willis found that adding a small amount of manganese to certain soils in North Carolina corrected a chlorotic condition of oats and soy beans and caused a resumption of normal growth (*N. C. Exp. Sta. Bull.* 257). Gilbert and McLean reported similar results in the prevention of lime-reduced chlorosis of a number of species of plants by the application of manganese sulphate (*Rev. Appl. Mycol.*, 1928, p. 740).

Lee and McHargue described a serious chlorosis of sugar cane that was cured by dusting the plants with manganese sulphate or adding it to the soil (*Phytopathology*, 1928, p. 775). The same investigators found aluminum in small quantities stimulative of plant growth, although it is highly toxic in high concentrations (*Pl. Physiol.*, 1928, p. 293). Samuel and Piper claimed that the gray speck disease of oats in Australia is due to a manganese deficiency in the soil. Schreiner *et al.*, cured chlorosis in tomatoes, maize, tobacco, etc., in Everglade soil in Florida by adding manganese sulphate to the soil (*Ann. Appl. Biol.*, 1928, p. 469). Sommers and Sorokin (*Pl. Physiol.*, 1928, p. 237) and Johnston and Dore (*Science*, 1928, p. 324) claimed that boron in limited amounts is necessary for plant growth and that its absence is accompanied by abnormal changes in the plant structures and in pathological symptoms. Zinc was also found by Sommers to be necessary for the normal growth of plants in five different families, and it is considered to be essential for the nutrition of all the higher green plants (*Pl. Physiol.*, 1928, p. 217).

On account of its possible application to horticulture, there were a number of experiments reported on breaking of the rest period of plants. Denny and Stanton described their experiments in which the rest period of deutzia, azalea, flowering almond, etc., was broken and flowering hastened by subjecting the dormant plants to vapors of chemicals. The best results were secured with ethylene dichlorid and ethylene chlorhydrin. They claimed that in woody plants, dormancy lies in the buds and it is not distributed throughout the plant (*Amer. Jour. Bot.*, 1928, p. 327). Their investigations were extended to tubers and it was found possible to shorten the rest period of potato tubers by at least one month by soaking the tubers in weak solution of ethylene chlorhydrin or in sodium thiocyanate. Rosa reports similar experiments, and he found that treating large tubers cut before planting gave the best results (*Hilgardia*, 1928, p. 99). This discovery is of practical importance in some regions,

as it will make possible the growing of two crops in one season.

At the 1927 meeting of the American Association for the Advancement of Science, the effect of irradiation on the mutation of plants and animals was announced. Some further work on phases of this phenomenon was reported, and Stadler reports having produced mutations in barley by exposing germinating seeds to X-ray and radium emanations (*Science*, 1928, p. 186). Several investigators reported the effect of irradiation on plant growth. Stoklasa claimed that growth of a number of horticultural plants was stimulated and that there was a greater total weight following the irradiation of the seed (*Gartenbauwiss.*, 1928, p. 149). Johnson found that irradiating sunflower seeds with X-rays retarded germination and growth, the inhibitory effect being in proportion to the exposure (*Amer. Jour. Bot.*, 1928, p. 65). He also reported that irradiating sprouted potato tubers with a light treatment of X-rays before planting resulted in the production of a greater number of tubers per plant, but with a reduced total weight of product (*Science*, 1928, p. 28). Delf and others in England report similar results with the use of the ultra-violet light. Sayre studied the effect of radiant energy on chlorophyll production by seedlings and found that wave lengths beyond 680 μ were ineffective. With equal energy values the red rays were more effective than the green ones, and the green ones more than the blue (*Pl. Physiol.*, 1928, p. 71).

MISCELLANEOUS STUDIES. MacDougal and Brown, continuing studies on the duration of living-ray cells in plants (YEAR BOOK, 1927, p. 120), reported having found living-ray cells in the centre of the trunk of a paloverde tree (*Parkinsonia microphylla*) that from their position must have been three centuries old (*Science*, 1928, p. 447). Molisch reported experiments on the movement of sap in plants that were said to confirm the claim of Bose that sap circulation is a vital and not a physical process (*Nature*, 1928, p. 168). On the other hand, MacDougal offered additional evidence to show that the upward movement of sap in trees is due to tension caused by the evaporation of water by the leaves. The tension is transmitted through the leaf stems and branches to the trunk and down to the roots, which draw upon the water supply of the soil.

Kato and Maruyama claim that it is possible to distinguish different varieties of rice by sero-diagnostic methods (*Jap. Jour. Bot.*, 1928, p. 35), and Satina and Blakeslee have found biochemical differences between sexes in plants (*Nat. Acad. Sci. Proc.* 1927, p. 115). The ability to reduce potassium permanganate and the response to the Manilov reaction (YEAR BOOK, 1927, p. 120) were closely parallel.

Davis reported some interesting correlations between high pressures and the germination of such refractive seeds as alfalfa and sweet clover. Seeds subjected to pressures of 2000 atmospheres for five minutes at a temperature of 18° C., after storing for 30 days gave much higher percentages of germination than untreated seeds. Lower pressures at longer times did not give the same results. Lipman claims the discovery of living organisms in pre-Cambrian and Pliocene rocks. They were grown in cultures, and some are said to possess characters of the Actinomyces group. They are supposed to have remained in the rocks in spore forms (*Science*, 1928, p. 272).

PLANT DISEASES. The season of 1928 was generally favorable for many fungus diseases throughout much of the United States. The rusts of grain caused relatively little loss. On winter wheat, stem rust was almost negligible, and only from 1 to 3 per cent loss was reported from the spring wheat area. Rather heavy infections were found in small areas of Minnesota and South Dakota that are believed to have originated from barberry plants recently discovered in northeastern South Dakota. The campaign for the eradication of the common barberry, which serves as an alternate host for the wheat-stem rust, is being continued, and the light infestation of rust in 1928 is attributed in some degree to the greatly reduced number of barberries.

In 1927, according to *The Plant Disease Reporter*, there was much loss due to stem rust of wheat, from 50 to 75 per cent loss having been reported in parts of Minnesota and northeastern South Dakota. The Red River Valley escaped serious damage, and in the western parts of North Dakota and South Dakota the loss was slight. Formerly all these spring wheat areas suffered severely when conditions were favorable for rust infection. Wheat smut took heavy toll wherever seed treatment had not been adopted. In Illinois, dockage on account of smut was estimated to have been in excess of \$518,000. In Indiana, dockages ranging from 50 cents to \$1 per acre were recorded. Oat smut was reported to have destroyed from 1.5 per cent of the crop in Connecticut, New Jersey, and Idaho to 20 per cent in North Carolina and 35 per cent in South Carolina. These losses are inexcusable as it has been shown that the cereal smuts can be controlled by suitable seed treatments at a very low cost.

During the year the white pine blister rust was found in 16 additional counties in Michigan and in 37 counties in Pennsylvania. In the Pacific Northwest it is now well established in northeastern Washington, Idaho, Montana, and in northern Oregon. Control measures, which involve the destruction of all currant and gooseberry bushes near white pine, have been put into effect in New England and New York, and about three-fourths of the white pine areas in those States have been given protection. Similar control measures are being tested in the Pacific States. Chestnut blight continues to spread in the Southern States, and most of the native chestnut trees in the southern Appalachian region are expected to be killed within 10 years.

The European larch canker (*Dasyscypha willkommii*), first found in America at Hamilton, Mass., in 1927, was considered to be potentially the most dangerous forest-tree disease introduced into this country. It is of the same type as the chestnut canker, and in addition to the larch, the fungus can attack many other coniferous trees. A new disease of Monterey cypress was reported in California. It was caused by a species of *Coryneum*, and the Italian cypress was also subject to attack. Both trees are extensively planted for windbreaks and as ornamentals. An elm disease appeared in western Europe that is quite destructive. The fungus which causes the disease is said to be *Graphium ulmi*, and practically all varieties of elm appear susceptible. A disease of linden trees caused by *Massariella curreyi* was discovered in New Jersey during the summer of 1928. A new and serious disease known as the phony disease of peach has appeared in Georgia.

Little was known as to the cause or nature of the disease, but it had almost completely destroyed a number of large peach orchards.

The cause, host relationships, and means of transmission of the so-called virus or mosaic diseases of plants continue to puzzle investigators in many lands. From the known etiology of some animal diseases certain plant pathologists are seeking for similar explanations as to the cause of mosaic in plants. Iriate has shown the presence of flagellated organisms in various species of Euphorbia and in cassava, but apparently no disease is caused by them. The flagellates were readily transferred by insect carriers to susceptible hosts (*Inaug. Dis.*, 1928). Holmes claimed to have found two types of intercellular bodies associated with mosaic of Hippeastrum, but when photographed with ultra-violet light seven typical species of mosaic plants showed no formal structures that did not appear in healthy ones (*Bot. Gaz.* 86, 1928, p. 59). Goldstein reports the finding of X-bodies in variegated dahlia leaves affected with mosaic, and they are considered to be definite entities and not degeneration products (*Torrey Bull.*, 1927, p. 285). The Connecticut Agricultural Experiment Station reports (*Bull.* 291) the occurrence of definite inclusions in the nucleus of mosaic infected tobacco cells and that the active principle remained effective in tobacco leaves that had been preserved for 24 years in the herbarium. Purdy claims to have transmitted mosaic to detached tobacco leaves with the appearance of characteristic intercellular bodies, and evidence was secured to indicate that the causal agent multiplied in the host tissues (*Amer. Jour. Bot.*, 1928, p. 94).

The interrelations of certain types of mosaic have been extensively investigated. Van der Meulen and Quanger have reported that their experiments show the specialization of certain types of mosaic to certain host plants, which indicates that a definite relationship exists between some of the mosaic diseases and certain crops or groups of plants (*Landbouw.*, 1928, p. 63). In other cases the transfer of the causal agent from one kind of plant to another results in a different type of disease. Bewley and Corbett found that transferring the aucuba and stripe forms of mosaic of tomato to other tomato and tobacco plants resulted in the appearance of either or both forms of disease. Tobacco and tomato plants inoculated with the stripe form of tomato produced typical mosaic. Stripe inoculated into jimson weed produced no form of mosaic (*Rev. Appl. Mycol.*, 1928, p. 748). Smith claimed that the diseases of tomatoes and tobacco known as mosaic and aucuba were quite distinct. It was believed that there were several strains of virus that were capable of producing mosaic diseases of potato (*Ann. Appl. Biol.*, 1928, p. 517). Pole Evans claimed that there were distinct strains of streak, a mosaic disease of sugar cane, maize, and several grasses in South Africa (*Farming in South Africa*, 1928, p. 1087).

Insects appeared to be the principal means of carrying mosaic diseases from plant to plant, and in a number of cases a specific insect acts as the carrier of infection, such as sugar beet curly top, mosaic of sugar cane, a new virus disease of potatoes, rosette of peanuts, maize streak, strawberry yellows, and a virus disease of Bermuda lilies. Various studies have been reported which lead to that conclusion. Atanasoff, however, claimed from studies of infectious mosaic

diseases, that there must be some other agencies than insects which act as carriers of the infection (*Bull. Soc. Bot. Bulgaria*, 1928, p. 50). Valleau found that tobacco mosaic was readily transmitted by laborers chewing infected natural leaf tobacco and spitting in seed beds. Some brands of commercial tobacco and cigarettes were also found to be sources of infection. A number of new infectious mosaic diseases were reported during the past year. Among them were: one of tobacco in Sumatra; the "breaking" of tulips; an infectious chlorosis of roses in New Jersey; a mosaic disease of sugar beets in Germany; a disease of sandal wood in southern India; and a mosaic disease of onions in Iowa.

Profiting by the knowledge gained from studies in genetics, plant breeders were making important progress in the development of resistant strains and varieties of many of the common plants. Some of these have been extensively adopted in general agriculture and horticulture. Many experimenters claimed that resistance could be built up by continued crossing with resistant forms and by repeated selection from among the progenies. A large number of superior strains of wheat, oats, flax, tobacco, potato, tomato, beans, peas, cabbage, etc., had been developed in this manner.

This method of combating plant diseases, although very promising, has its limitations. It has been found that some of the fungi have developed strains, known as physiologic forms, that are capable of attacking certain varieties but not others. Thus there are known to be nearly 60 physiologic forms of wheat stem rust, 8 of which were described from Canada during 1928 by Newton *et al.* (*Sci. Agr.*, 1928, p. 209). Reichert found that durum wheats which are considered quite resistant to wheat bunt in the United States are highly susceptible in Palestine, indicating different physiologic forms in the two countries. Apparently the generalization that there is a correlation between the number of chromosomes in varieties of wheat and their resistance to bunt does not hold in Palestine. Reed reported at least four distinct specialized forms of bunt in the United States as shown by the reaction of the fungus to different varieties of wheat (*Amer. Jour. Bot.*, 1928, p. 157). Gordon has described a new physiologic form of *Puccinia graminis avenae* on oats, making at least six forms that are now known. Dickinson reports having developed four distinct strains of loose smut of wheat from a single spore (*Proc. Roy. Soc.*, 1928, B, p. 547).

NECROLOGY. The year 1928 took heavy toll of the botanists of international reputation. Among those whose deaths were reported were: Dr. H. M. Benedict, professor of botany of the University of Cincinnati, Oct. 17, 1928; Prof. E. S. Burgess, Hunter College, New York City, February 23; Dr. John M. Coulter, founder and editor of *The Botanical Gazette*, and for many years head of the department of botany of Chicago University, December 23; Charles Curtis, former director of the botanic gardens at Penang, Straits Settlements, August 16; Leon Guignard, French botanist, March 7; J. A. Henriques, founder of *Boletim de Sociedade Broteriana*; Dr. W. Johansson, Danish botanist and geneticist, Nov. 11, 1927; Prof. J. E. Kirkwood, professor of botany, University of Montana, Aug. 16, 1928; Dr. J. Matsumura, director of the botanic gardens, Tokyo, May 4; S. B. Parish, well known for his

contributions to the flora of California, June 5; Mrs. Flora W. Patterson, for 20 years mycologist of the U. S. Department of Agriculture, February 5; Dr. H. M. Richards, professor of botany, Barnard College, Columbia University, January 9; Prof. J. Ritzema Bos, Dutch botanist, April 7; Dr. J. N. Rose, associate curator, U. S. National Herbarium, May 4; Dr. F. L. Sargent, formerly professor of botany, University of Wisconsin and later with the Boston Museum, January 16; Capt. John Donnell Smith, intimately associated with reports on the flora of Central America, December 2; Sir W. T. Thisleton-Dyer, for 20 years director of the botanic gardens at Kew, England, December 26; and Sir Henry Wickham, who succeeded in getting Hevea seeds from Brazil in 1876 and thus made it possible to start the plantation rubber industry in southeastern Asia, September 27. Biographical sketches of many of these appear elsewhere in this YEAR BOOK.

NEW JOURNALS. The Botanical Section of the Agricultural Science Committee of the Ukraine began the publication of the *Journal of Agricultural Botany*. The leading articles are accompanied with English or German abstracts. The British Empire Vegetation Committee, appointed at the Imperial Botanical Congress held in London in 1924, arranged with the *Journal of Ecology* to publish supplements giving abstracts of publications pertaining to all phases of botany in the British Empire. See also PHYSICS.

BOULDER DAM PROJECT. See DAMS; NEW MEXICO; UNITED STATES, under *Seventieth Congress. Second Session.*

BOUNDARY DISPUTES. See ARBITRATION, INTERNATIONAL.

BOUVET (bōō'vā') ISLAND. In November, British rights to Bouvet Island in the South Atlantic (Lat. 54°26'S; Long. 3°24'E.) were waived in favor of Norway. Sighted by Lozier-Bouvet in 1739, such explorers as Cook and Ross failed to relocate it. Meanwhile Liverpool, Lindsay, and Thompson islands had been discovered in the vicinity. Finally, the German *Valdivia* Expedition of 1898 located an island at a distance from the one discovered by Bouvet but which was named in his honor. Since Captain Norris in 1825 had sighted Thompson Island and had landed and taken possession of Liverpool Island, the British Government, considering Liverpool Island identical with this second Bouvet Island, in 1928 announced a lease of the whaling rights of Bouvet and Thompson islands. The Norwegian Government pointed out that a Norwegian expedition in the whaler, *Norvegia*, had landed and taken possession of Bouvet Island in December, 1927. Since it was difficult if not impossible, to prove that the present Bouvet Island and the Liverpool Island of Norris were identical and since no further occupation of the island had been made, the British Government recognized the Norwegian claim to Bouvet Island.

BOWDOIN COLLEGE. An institution of higher education for men, at Brunswick, Maine, founded in 1794. The autumn session of 1928 had an enrollment of 559, including: Seniors, 143; juniors, 124; sophomores, 140; and freshmen, 152. There were 52 members on the faculty in the 1928-29 term, of whom eight were appointed after June, 1928. The productive funds of the college amounted to \$4,984,000, and the income for 1927-28 to \$250,000. The library contained 145,000 bound volumes. A swimming pool

costing \$150,000, and a Union building costing \$200,000, were completed in 1928. President, Kenneth Charles Morton Sills, LL.D.

BOWLING. The bowling honors for 1928 rest with Phillip Wolf of Chicago who accumulated a total of 1937 points in the eighth annual tourney of the American Bowling Congress, held at Kansas City, Mo. Wolf tallied 657 in the five-man event, 650 in the doubles, and 630 in the singles. Henry Summers, twenty-three years old, won the singles with 705. The doubles title went to William and Joseph Hradek of Cicero, Ill., with 1363. The Oh Henry team of Chicago carried off the five-man laurels with 3057.

BOXING. Professional boxing suffered a severe slump in 1928, the climax being afforded by the Gene Tunney-Tom Heeney heavyweight battle for the world championship at the Yankee Stadium on July 26. Despite the widespread publicity this contest received it attracted only 43,191 persons and produced but \$691,014 in gross receipts. Tunney successfully defended his title by knocking out his opponent in the eleventh round of a scheduled fifteen-round bout. It was estimated that Tex Rickard, the promoter of the affair, sustained a loss of \$250,000, the famous boxing impresario's first real financial setback. Soon afterward, Tunney announced his permanent retirement from the ring. This was followed by his marriage to Miss Polly Lauder. Jack Dempsey, former champion, who was defeated in 1926 and 1927 by Tunney, also declared himself through with boxing for all time, but many followers of this sport were of the opinion that Dempsey would fight one more battle with the winner of the proposed elimination heavyweight tournament as his opponent.

Tommy Loughran, holder of the light heavyweight title, proved himself a real fighting champion by defending his crown three times during 1928. He earned a decision over Leo Lomski at Madison Square Garden, New York, and twice defeated Pete Latzo. Mickey Walker succeeded in retaining his middleweight title as the result of a somewhat weird decision over "Ace" Hudkins in Chicago. Joe Dundee, welterweight champion, won from Hilario Martinez in Spain, and Sammy Mandell, lightweight king, conquered Jimmy McLarin. Tony Canzoneri won and then lost the world featherweight laurels. He defeated Benny Bass, but later bowed to André Routis of France. Two world championships were in dispute. Kid Francis and Bushy Graham both claimed the bantamweight title, while Frankie Genaro and Corporal Izzy Schwarz disputed the flyweight honors.

The Amateur Athletic Union championships were contested at Boston, the following being returned winners in the various classes: flyweight, Hymen Miller, Los Angeles, Calif.; bantamweight, Johnny Daley, Waltham, Mass.; featherweight, Harry Devine, Worcester, Mass.; lightweight, Steve Holaiiko, Buffalo, N. Y.; welterweight, Tommy Lown, New York City; middleweight, Harry H. Henderson, Annapolis, Md.; welterweight, Leon Lucas, Philadelphia; heavyweight, George Hoffman, New York City.

Boxing as a college sport advanced a stride further in popularity in 1928, the U. S. Naval Academy winning the Eastern Intercollegiate championship. The individual title winners were: 115 pounds, J. C. Renard, U. S. Naval Academy; 125 pounds, A. Filegar, Penn. State; 135 pounds, H. Williams, U. S. Naval Academy; 145 pounds,

M. Gerin, U. S. Naval Academy; 160 pounds, A. Wolff, Penn. State; 175 pounds, L. O'Malley, Massachusetts Institute of Technology; unlimited class, Leonard Grant, New York University. See OLYMPIC GAMES.

BOY-ED, Ida. German novelist, died May 13. She was born at Bergedorf, near Hamburg, Apr. 17, 1852, the daughter of C. M., and Pauline Ed, and she married Carl J. Boy, Oct. 21, 1870. Living in Lübeck, she wrote polished novels which gave lively, superficial pictures of current society. Among the most popular of her books are *Männer der Zeit* (1885, 3d ed.); *Aus Tan-talus' Geschlecht* (1891, 2d ed.); *Um Helena* (1901); *Ein königlicher Kaufmann* (1910); *Ein Augenblick im Paradies* (1912); and *Vor der Ehe* (1914). She also wrote biographies of *Charlotte von Kalb* (1912); and *Frau von Stael* (1922); as well as a psychological study, *Das Martyrium der Charlotte von Stein* (1916). Her son, Captain Karl Boy-Ed was German naval attaché in the United States in 1915.

BOY SCOUTS OF AMERICA. An organization incorporated in 1910 and chartered by Congress in June, 1916, to develop the character of boys and train them for the duties of adult life by influence brought to bear in their work and play. The National Constitution of the Boy Scouts of America declares the intention to "promote the ability of boys to do things for themselves and others, to train them in scout craft and to teach them patriotism, courage, self-reliance, and kindred virtues." Each boy joining the organization takes the Scout Oath, and the Scout Law requires the members to exert such qualities as trustworthiness, helpfulness, loyalty, kindness, cheerfulness, bravery, cleanliness, and reverence. Among the foremost scout activities are camping and hiking, nature study and many kinds of outdoor work, exercise, and craftsmanship. Successive ranks in membership are attained by passing tests graded in difficulty. Merit badges, 88 in number, may be attained by meeting requirements for each. These cover proficiency in pursuits both of the useful and of the hobby type, such as dairying, plumbing, pioneering, physical development, astronomy, music, chemistry, and others equally diverse. By attaining certain numbers of the merit badges, a boy may rise to the higher ranks of Star, Life, and Eagle scout.

In 1928, 300,000 boys spent a week or more in camp under Boy Scout auspices. Local councils conducted 652 camps; and at least 2400 troop camps were also conducted. The Boy Scout movement, in cooperation with the Forestry Department, fights and prevents forest fires, conserves wild life, and plants trees. It renders services in local campaigns of various sorts and cooperates with many national societies and movements. Membership in 1928 was 794,000, and there were 207,000 Scout leaders. The National Council, the governing body, has its offices in the Park Avenue Building, 2 Park Avenue, 32nd and 33rd Streets, New York. In 1928 the officers were: Walter W. Head, Omaha, Nebr., president; George D. Pratt, Treasurer; James E. West, chief scout executive; Daniel Carter Beard, national scout commissioner; Mortimer L. Schiff, international commissioner. There were 12 regional scout districts, under direct supervision of the National Council's national scout executives, subdivided in 1928 into 661 local councils. The boys were organized into troops of 32 each. The troops were made up of patrols of 8 or less, each under a

boy leader. In small areas, a farm or home Scout Patrol may be formed with as few as 4 boys; and a boy who lives in an area so isolated that he cannot join a troop or patrol, may become a Lone Scout and carry on the Scout programme alone.

Sea scouting is a part of the Boy Scout programme and provides training for older boys in seamanship and water activities. A scoutmaster commissioned by the National Council is provided for each troop. He must be an adult citizen of proved fitness. Troops are commonly formed in connection with schools, churches, or other existing bodies, and each must be sponsored by a troop committee of three or more adults, who select the scoutmaster and supervise the execution of the programme. The movement is non-sectarian, and without military or political connection. The official magazine for boys is *Boys' Life*. The organization also publishes magazines for scout leaders, merit-badge pamphlets, and other material pertaining to the movement.

BRAZIL. The largest of the South American republics; situated in the northern and eastern part of the continent of South America; a federal republic. Capital and largest city, Rio de Janeiro.

AREA AND POPULATION. The area of Brazil is given at 3,285,318 square miles, which gives it an area more than 250,000 square miles greater than that of the continental United States. The country is divided into 20 states, one territory and one Federal District. According to the census of 1920 the population of the Republic was 30,635,605, which represents a density of 9.3 inhabitants to the square mile. The principal cities with their populations, according to the same census are Rio de Janeiro, 1,157,873; São Paulo, 579,033; Bahia, 283,422; Recife, 238,843; Belem, 236,402; Porto Alegre, 179,263. According to statistics furnished by the Statistical Bureau, the population of Brazil on Dec. 31, 1926, totaled 36,870,972, divided among the states, territory, and Federal District as follows:

Afagões, 1,117,045; Amazonas, 409,699; Bahia, 3,859,241; Ceará, 1,520,335; Federal District, 1,360,586; Espírito Santo, 587,451; Goyaz, 640,491; Maranhão, 1,047,206; Matto-Grosso, 312,661; Minas Geraes, 6,902,511; Pará, 1,269,344; Parahyba do Norte, 1,193,260; Paraná, 870,255; Pernambuco, 2,617,310; Piahy, 738,740; Rio de Janeiro, 1,844,304; Rio Grande de Norte, 666,903; Rio Grande do Sul, 2,683,683; Santa Catharina, 847,656; São Paulo, 5,751,822; Sergipe, 524,095; Acre Territory, 106,374. According to figures published in *Wileman's Brazilian Review* in February, 1928, the population of Brazil at the close of 1926 was 36,870,972. An official American estimate placed it at 39,695,000 in 1928.

EDUCATION. Education is free but not compulsory, except in seven states where it is both free and compulsory. In connection with the centenary of the establishment of primary schools in Brazil, celebrated late in 1926, the Bureau of Statistics compiled as complete figures as possible regarding present-day primary education. When published early in 1928, the report stated that although data received from some states were incomplete, it was estimated that, counting public and private kindergartens, one-teacher and graded primary schools, there were about 24,000 schools, 1,500,000 pupils enrolled, and over 35,000 teachers throughout the Re-

public. The latest figures for secondary schools are those for the census year 1920, when there were approximately 450 secondary schools with 48,000 pupils, and 367 professional schools with more than 37,000 pupils. There were also 76 colleges for training teachers. There is only one official university in Brazil, that of Rio de Janeiro.

Promoted by the Associaçao Brasileira de Educacao, the second national conference on education was held in the city of Bello Horizonte, State of Minas Geraes, in September, 1928.

PRODUCTION, ETC. Brazil is primarily an agricultural country with coffee the dominant factor upon which the whole economic well-being of the nation depends. Every year coffee accounts for between 60 and 75 per cent of Brazil's total exports, the remaining 25 to 40 per cent being divided among a number of minor products. Of these rubber is notable because although it is indigenous to the Amazon Valley, competition from Eastern plantation rubber which is produced more efficiently and economically in the East Indies has deprived Brazil of first place in world production since 1912, and only recently have serious attempts been made to systematize and increase production. Cacao is also of superior importance because Brazil produces about 13 per cent of the world supply of this product, being surpassed only by British West Africa. Brazil has great potentialities as a producer of vegetable oil, but this industry is not yet well developed. Brazil nuts constitute more than half of the values of exports of oilseeds and kernels, the remainder being made up largely of palm nuts, cottonseed, and castor seed.

Owing to the vast extent of its agricultural area, the average holding is of large size. Only a small portion is cultivated, but statistics indicate a rapid increase in recent years. Public lands in Brazil are the property of the several states of the Republic, except in such cases where titles have been transferred to the Federal Government for special purposes.

Production figures for 1927 in the terms of the value of exports showed 15,115,000 bags of coffee valued at \$304,954,000 were shipped. The value of those sent to the United States was \$155,951,000. Rubber exports were valued at \$12,735,000; cacao, \$22,490,000; yerba mate, \$13,014,000; cattle hides, \$15,505,000; and tobacco, \$8,476,000. The cotton production was 449,000 bales of 478 pounds each and the sugar production 851,000 long tons. The 1927-28 crops of Brazilian coffee amounted to more than 24,000,000 bags.

Coal, gold, diamonds, petroleum, monazite, manganese, platinum, copper ore, and talc are the chief mineral resources, but none of these products figures conspicuously in the export trade. Sufficient coal is mined to supply about one-half the domestic needs. The forests are extensive and an important source of wealth. Cotton weaving is the most important manufacturing industry in Brazil. According to the latest statistics (1926) there were 329 cotton factories with 2,528,611 spindles and 124,619 workmen, having a capital invested in them of 587,598,000 milreis, and an output valued at 981,082,000 milreis. The manufacture of silk is being encouraged, the Federal Government granting premiums to silk cocoon producers. There were 13 silk mills, 35 woolen mills, and 16 jute mills in Brazil. Of branches of manufactur-

ing are paper mills, tobacco factories, sugar and flour mills, and meat-packing establishments.

COMMERCE. Two major influences on Brazil's foreign trade are the coffee situation and exchange. Constant fluctuations since the beginning of the World War have caused much uncertainty in Brazilian business. With the signing of the stabilization bill on Dec. 18, 1926, however, some of this difficulty was eliminated, and since then there has been a remarkably stable currency upon which business is beginning to rely. Aside from the exchange, the coffee movement is the most important single factor in Brazilian trade activities inasmuch as it approximates three-quarters of Brazil's entire ex-

ported wire, hardware, paints and varnishes, coal, electrical goods, hides, skins, and leather.

According to the Pan American *Bulletin* for September, 1928, official statistics of Brazil's foreign trade for 1927 give the value of imports for that year at 3,273,163,000 paper milreis compared with 2,705,553,000 milreis during 1926. Exports totaled in 1927, 3,644,118,000 milreis, against 3,190,559,000 milreis in 1926. Expressed in terms of United States currency the imports in 1927 were valued at \$387,035,946, the exports at \$430,899,609; in 1926 the imports were valued at \$386,452,404, and the exports at \$455,729,084. The leading exports in 1927, with comparative figures for 1926 were:

LEADING EXPORTS FROM BRAZIL

Articles	1926		1927	
	Tons	Value	Tons	Value
Coffee	13,751,000 ^a	\$335,329,952	15,115,000 ^b	\$304,555,397
Cacao	63,310	14,804,170	75,543	22,181,286
Hides	40,554	11,890,872	59,117	15,484,923
Yerba mate	92,657	16,314,812	90,092	12,997,635
Rubber	23,253	16,408,655	26,186	12,548,303
Tobacco	27,898	9,390,944	31,885	8,352,370
Oil-producing seeds	87,451	9,041,708	81,613	8,224,665
Skins	3,759	4,712,826	5,065	5,857,750
Cotton, raw	16,687	5,897,728	11,917	4,958,732
Frozen and chilled meats	6,994	1,325,953	32,604	4,777,935
Carnauba wax	5,768	3,350,378	7,033	3,743,289
Wool	7,206	6,050,421	5,014	3,451,578
Sugar	17,169	1,236,394	48,461	3,084,781
Timber and lumber	107,292	3,047,136	119,611	2,863,426
Manganese	319,825	3,614,340	241,823	2,509,755

^a Conversions to dollars were made at the average official rates for the respective years, i.e.: 1926, 7¢001; 1927, 8¢457.

^b Bags of 132 pounds each.

port trade. In order to minimize violent price fluctuations and to combat a tendency to decline

The principal items contributing to the import trade in 1926 and 1927 were:

LEADING IMPORTS INTO BRAZIL

Articles	1926		1927	
	Tons	Value	Tons	Value
Machinery, apparatus and tools	81,742	\$47,540,779	75,193	\$47,827,480
Wheat	542,658	36,564,490	595,537	35,141,184
Manufacturers of iron and steel	312,484	30,046,421	325,423	31,140,120
Manufactures of cotton	8,804	22,419,082	8,540	22,032,280
Coal, coke, and briquettes	1,939,580	17,549,350	2,214,598	20,280,241
Automobiles	32,954 ^a	18,246,893	29,591 ^a	18,733,323
Wheat flour	221,356	21,654,049	204,167	17,399,787
Gasoline	152,552	11,612,769	201,242	13,092,586
Chemical products and drugs	38,441	8,408,942	45,231	8,660,163
Codfish	36,978	9,024,425	36,098	7,871,349
Iron and steel, simply wrought	100,593	5,308,670	131,641	7,817,296
Paper and manufactures	53,918	8,460,362	47,721	7,448,558
Cement	396,322	6,344,665	441,959	6,978,276
Kerosene	91,021	5,798,315	111,841	6,792,479
Jute, raw	20,582	6,118,555	28,475	6,227,385
Fuel oil	217,599	3,213,112	358,427	6,034,882
Pelts and skins	1,121	4,564,490	1,108	4,859,938
Lumber and timber	29,862	1,836,166	36,302	2,229,395

^a Number.

during recent years, the São Paulo Coffee Defense Institute has resorted to a policy of restricting shipments of stocks from the interior to Santos, the world's principal coffee export port, thus curtailing sales and maintaining price levels even in the face of record-breaking crops such as that of 1927-28 which, as stated above, amounted to more than 24,000,000 bags.

The United States is by far the best customer Brazil has, and it likewise furnishes a larger percentage of Brazil's imports than does any other country. In 1927 the United States took 45 per cent of Brazil's exports, and sold to Brazil nearly 23 per cent of its total imports. Of Brazil's exports to the United States over 62 per cent consisted of coffee shipments. In Brazil's import trade the United States figures conspicuously as a supplier of automobiles, petroleum products, motion pictures, wheat flour, agricultural and industrial implements and machinery,

FINANCE. On May 3, 1928, at the opening of the Federal Congress, the President of Brazil delivered his annual message, of which a considerable portion was devoted to an exposition of the financial status of the Republic during 1927. In view of the large investments of American citizens in Brazil, the Executive's statements are of especial interest. For the first time in many years the financial operations of the Government, according to the President, resulted in a surplus. Revenues totaled 1,994,179 contos (about \$239,301,480) and expenditures 1,968,599 contos (about \$236,231,880). Although the surplus is comparatively insignificant, the fact that there is one is worthy of comment. During the 39 years of the Republic's régime, from 1889 to 1927, inclusive, upon only ten occasions have revenues exceeded expenditures. From the outbreak of the World War in 1914 through 1926, the total deficits are estimated at over 3,500,000

contos (about \$420,000,000). Examination of the figures disclose that both revenues and expenditures exceeded the budget estimates of 1,797,979 and 1,794,198 contos, respectively. Unfortunately, however, the data given by the Executive for the composition of the actual receipts and disbursements were so incomplete that analysis of the results is quite impossible. Only the following totals were presented:

BRAZILIAN REVENUES AND EXPENDITURES IN 1927

Item	Revenues	Expenditures	Surplus	Deficit
	Contos ^a	Contos ^a	Contos ^a	Contos ^a
Ordinary	1,880,646	1,320,866	559,780	.....
Extraordinary . . . . .	.....	332,089	.....	332,089
Special	113,533	315,644	.....	202,111
Total	1,994,179	1,968,599	25,580	.....

^a Conto = \$120.

The Brazilian budget for 1928, passed by Congress before its adjournment at the end of December, 1927, showed a deficit of 151,990 paper contos. The President did not sanction this budget but held it for the exercise of his power of partial veto until Jan. 15, 1928, on which date the final budget, as reduced by the President, was published. After the exercise of the partial veto power by the President, the budget showed a surplus of 117 paper contos. Total budgetary revenues and expenditures for 1928 were calculated at 2,088,933 and 2,088,816 paper contos, respectively, gold items having been converted into paper at a rate of 4.5765 paper mil-

nal debt into a consolidated foreign loan. The consolidated internal debt on Dec. 31, 1927, amounted to 2,435,367,300 milreis, or 43,306,000 milreis more than the preceding year. This increase was due, first, to the issue of certificates to bearer amounting to 8,456,000 milreis; secondly, to obligations incurred during the two previous years; and lastly, to 43,134,000 milreis of railway obligations—a special fund for a special purpose of which 8,234,000 milreis were redeemed in 1927. A presidential decree of May 3, 1928, fixed the value of the gold milreis at 4.567 paper milreis for the collection of payment in gold in the governmental administrative branches. Owing to the fact that a certain portion of the customs duties, taxes, and other public receipts is collected in gold, there had hitherto been considerable difficulty in calculations, due to the variations of the gold milreis expressed in paper.

COMMUNICATIONS. *Wileman's Brazilian Review* for Feb. 23, 1928, gave the following facts on railway development for Brazil. Construction of the first Brazilian railway was begun in 1852, nine miles being open to traffic in 1854. At the end of 1860 only 138 miles were open to traffic, and in 1870, only 462. During the next ten years, however, the mileage increased considerably, reaching 2112 miles, and rising steadily, to 6198 miles in 1890, to 9519 miles in 1900, to 13,342 miles in 1910, to 17,747 miles in 1920, and to 19,466 miles in 1926. Increases in mileage during 20 years were distributed as follows:

States	1907	Miles 1926	Increase Miles	Per cent
Amazonas, Goyaz, Matto Grosso . . . . .	.....	915	915	.....
Pará, Maranhão, Piauí, Ceará	587	1,383	796	135.4
Rio Grande do Norte, Paraíba, Pernambuco, Alagoas, Sergipe, Bahia	2,053	2,668	615	29.9
Espirito Santo, Rio de Janeiro, Minas Geraes, São Paulo	7,069	11,192	4,123	58.2
Santa Catharina, Paraná, Rio Grande do Sul	1,404	3,308	1,904	135.4
Total	11,113	19,466	8,353	75.1

reis to 1 gold milreis. Budgeted expenditures for 1928 showed an increase of 309,694 paper contos over those of 1927. The greatest reductions made by the President were in the Ministry of Transportation. The largest single item vetoed was that of 25,000 paper contos for the extension of present railways and the construction of new lines. The total expenditures itemized according to departments, as given in the final budget, are as follows: Justice and Interior, 145,040 paper contos; Foreign Relations, 31,172; Navy, 144,753; War, 255,548; Agriculture and Commerce, 80,696; Transportation, 533,485; Treasury, 898,122. Service on the foreign debt for 1928 totaled 473,210 paper contos. Expenditures of the Treasury Department showed an increase of 226,130 paper contos. The increase in this department's gold appropriation, amounting to 137,300 paper contos, is largely to meet the increased interest and amortization charges on the foreign debt. Service on the internal funded debt was placed at 163,606 paper contos.

According to President Luis's address to Congress, the foreign debt on Dec. 31, 1927, amounted to £109,284,477, 335,553,830 francs, and \$156,890,267, showing an increase of £6,853,657 and \$36,506,433, and a decrease of 935,067 francs in the year. The increase in the foreign debt was due to the conversion of the floating inter-

The States which possess the greatest mileage are Minas Geraes, with 4758 miles; São Paulo, with 4227 miles; Rio de Janeiro and the Federal District, with 1763 miles; Rio Grand do Sul, with 1882 miles; and Bahia, with 1218 miles, which aggregate 13,848 miles or 71 per cent of the total Brazilian mileage. Brazil has railway communication with Argentina and Uruguay, and plans to extend her system to Bolivia. The length of the lines in operation and projected at the close of 1926 were as follows:

Railways	In miles Government concession	States' concession	Total
In traffic (single track)	14,589	4,877	19,466
Under construction	972	303	1,275
Projected	4,025	292	4,317
Total	19,586	5,472	25,058

The principal railway is the government-owned Central of Brazil which has a total length of line in operation of 1804 miles. This railway connects the city of Rio de Janeiro with the States of Minas Geraes, São Paulo, and Rio de Janeiro and has extended its service to Bahia. An American estimate of railway mileage in 1928 placed it at 19,576 miles. In 1926 there were 33,060 miles of highway, 103,020 miles of

telegraph wire, and 36,836,114 tons of shipping entered and cleared at the ports of the country. In 1928, 102,984 telephone instruments were in use and 136,000 automobiles registered.

GOVERNMENT. The executive power is vested in the President, who with the Vice President is elected directly by the people for four years and is ineligible for reelection; and the legislative power in the National Congress which consists of the chamber of deputies and the senate, the former having 212 members elected for three years by popular vote on the basis of minority representation, and the latter 63 members elected for nine years by direct vote, one-third being retired every three years. The Vice President presides over the Senate. President in 1928, Dr. Washington Luis Pereira de Souza (assumed office Nov. 15, 1926); Vice President, Mello Vianna.

HISTORY. In a year of comparative quiet, the rumblings of the revolutionary movements in the State of São Paulo were only slightly heard. The Government continued its strong policy of repression and made every effort to prevent the rebels from crossing the border into neighboring countries. From an economic point of view the agreement between the State of Para and the Ford Motor Company of the United States for the growing of rubber was of more than passing moment. The movement was not received in some quarters of Brazil on the grounds that it might hurt native industry. Of local interest was the settlement of the Apararotis-Tabatinga boundary dispute between Brazil and Colombia, which was brought about by direct negotiations between the two countries involved. On Dec. 25, 1928, Brazil and Bolivia signed a treaty fixing definitely a common frontier not included in the treaties of 1867 and 1903 and including plans for a railroad to connect Cohabamba and Santa Cruz de las Sierras with ports on the Amazon and Paraguay rivers.

BRENNAN, GEORGE E. An American politician and democratic leader in Illinois, died August 8, at Chicago. He was born at Port Byron, N. Y., in 1865. By his twelfth year he was working in a coal mine at Braidwood, Ill. An accident which resulted in the amputation of his leg, forced him to give up physical work and fit himself for teaching. After a few years spent in teaching he accepted the position of a clerk in the office of the Secretary of State, W. H. Hinrichsen, at Springfield, from 1893 until 1897. Mr. Brennan moved to Chicago afterward and engaged in the casualty insurance and surety bond business. By 1906 he had become the manager of the Chicago office of the United States Fidelity Company. To him as an active worker for the Democratic party, politics continued to appeal, and in 1920 he was sufficiently powerful to oppose effectively the nomination of William G. McAdoo at the National Convention. For the next four years he devoted himself to the Chicago government, in opposition to William Hale Thompson, the Republican Mayor. In 1924 he was a dominant figure in the Democratic National Convention, serving as chairman of the Illinois delegation and becoming in that year a member of the Democratic National Committee. He again opposed Mr. McAdoo, and supported Alfred E. Smith. He was a vehement anti-prohibitionist, and ran, unsuccessfully, against Frank L. Smith for the office of United States Senator.

BRETHREN, CHURCH OF THE. A church established in the United States in 1719 at Germantown, Pa. It originated in Schwarzenau, Germany, in 1708, and is the largest of the five branches of the denomination formerly known as the German Baptist Brethren or "Dunkers." Other churches of this group are: The Church of God (New Dunkards); Brethren Church (Progressive Dunkers); German Seventh-Day Baptists; and Old Order German Baptists Brethren. The policy of the Church of the Brethren corresponds more nearly to the Presbyterian than to any other specific ecclesiastical form. It comprises 49 district conferences and holds a General Conference annually. Figures for 1923 showed 1031 churches and a membership of 133,751; Sunday schools numbered 1180 and scholars, 135,000. Foreign missionary work was carried on in India, China, and Africa. The total membership in India and China was 4829 in June, 1928. Expenditures for the year ending Feb. 29, 1928, totaled \$315,836. Eight colleges, one academy, and one theological seminary and training school maintained by the denomination had an enrollment of 4843 students. Officers of the General Conference in 1928 were: The Rev. Otho Winger, North Manchester, Ind., moderator; the Rev. V. F. Schwalm, McPherson, Kans., reading clerk; and I. B. Book, North Manchester, Ind., writing clerk. The Rev. Otho Winger, North Manchester, Ind., was president of the General Mission Board. The *Gospel Messenger* is the official organ of the denomination. The *Missionary Visitor* is the promotional periodical of the General Mission Board. The headquarters of the General Mission Board, Board of Religious Education, and the Council of Boards are at Elgin, Ill.; of the General Education Board, 3635 Ordway St., N. W., Washington, D. C.; and of the General Ministerial Board, Pleasant Hill, Ohio.

BREWER, SIR ALFRED HERBERT. A distinguished British organist and conductor, died at Gloucester, March 1. He was born there, June 21, 1865. Even before completing his studies at the Royal College of Music he served as organist at St. Catharine's in Gloucester and immediately after his graduation, in 1885, he was appointed organist at Bristol Cathedral. From 1896 until his death he was organist and choir-master at Gloucester Cathedral, conductor of the Gloucester Triennial Music Festival and the Gloucestershire Orchestral Society. He composed several cantatas and services, minor orchestral works, pieces for organ and for piano, anthems and songs.

BRIAND PROPOSALS. See KELLOGG TREATIES.

BRIDGES. The remarkable growth of motor transportation, which had brought highway construction from a relatively neglected art into the forefront of engineering activities within the past twenty years, continued to be the most important influence in bridge progress during 1928. The needs of transportation to and from great urban centres has justified bridge and tunnel constructions which break all records. Suspension bridges have continued in favor for long spans and highway loads, loads which, although heavy compared with former road practice, are light compared with railroad requirements. Such suspension bridges as the Mid-Hudson (1500-feet) and Mount Hope (1200-feet) or even the Detroit International (1850-feet) are, of course, overshadowed by the huge Hudson River work of 3500-foot span, about twice as large as the greatest hitherto erected, under construction during the year.

When the Hell Gate Arch, a 1000-foot span across the East River, N. Y., was completed in 1917, it was hailed as the greatest arch in the world. A rapid-transit-highway arch, a 1650-foot span, was under erection at Sydney, Australia, and plans were settled for a 1675-foot highway arch to cross Kill Van Kull at Bayonne, N. J. The year also saw the completion of an arch bridge at Newcastle-upon-Tyne in Great Britain, and another daring arch in the wilds of Arizona, 130 miles from the nearest railroad. These are simply outstanding examples of the extent to which highway requirements had given new life and impetus to long-span bridge construction.

Cantilever bridges are also used where location and costs favor such construction. Perhaps the Snake River cantilever in Idaho, 502 feet above stream bed, held the height record, and two important cantilevers with long approaches, which would have attracted great attention a few years previously, were quietly opened in the Autumn of 1928 by the New York Port Authority to join Staten Island and New Jersey.

The outstanding development in structural steel of the last year or two undoubtedly was the widespread use of oxy-acetylene cutting and welding methods. By 1928 practically every steel erection party had an oxy-acetylene torch on the job and the same process was extensively used in shops where steel work is fabricated. That this rapid and inexpensive method of cutting steel had great advantages is obvious, but at the same time it is known to impair the quality of the metal adjacent to the cut and may set up internal temperature stresses causing serious overstrain. More thorough control of its use than now exists is obviously essential.

Welding had reached the point where there were both a building and a bridge in which welds had replaced the older riveting methods. Here again it was considered possible to go too far with a method which possesses undoubted advantages but which also has its limitations and may frequently seriously impair the shock resisting quality of the metal adjacent to the weld. A new and rapidly growing process was in the formative stage, and the future will doubtless see not only the development of welding details, better suited to the process than the forms taken from riveting practice which had so far predominated but also a clearer understanding of its limitations and the conditions under which its use may be conservatively recommended.

The further use of specially heat-treated and carbon and alloy steels continued in new works planned or undertaken during the year. Nickel steel, a few years ago prohibitive in price compared on a strength basis with structural steel, had at last found itself. These trends were well illustrated by the fact that in the plans for the Great Kill van Kull Arch, announced at the end of the year, over one-half the tonnage was alloy-steel.

The financing problem continued in an interesting stage. In several States definite steps were taken to prevent the construction of great highway works as private toll bridges. A number of great works under way or completed in 1927 were of this type, but it would appear that the scheme of State or commission control and construction on a plan by which the bridge becomes free as soon as tolls have paid for construction, will probably be extended. The work of the New York Port Authority was on this basis and ap-

pealed to many as an ideal solution of the finance problem provided such bodies can be kept free of political influence.

HUDSON RIVER BRIDGE. Very satisfactory progress was made on this great work, which involves a clear span of 3500 feet or almost exactly twice that of the largest span bridge ever built. The two great steel towers (625 feet or almost the height of a 60-story building) were carried up to within two column lengths of their full height. The excavation of the deep approach cut through the Palisades at the west end (Fort Lee, N. J.) was well advanced and masonry wall construction under way. At the east (New York) end, the massive interior concrete masonry of the anchorage was almost completed. The two huge masses supporting the saddles over which the cables bend in passing into the anchorage were practically complete. The girders and eye bar connections, to which the cables were to be fastened, were completely placed and rapid progress was being made in covering these anchors with a mass of concrete which will be some 85 feet high and will give the requisite weight to resist the immense pull from the cables.

Discussion still continued regarding the architectural treatment of the structure, particularly the proposal of the architectural adviser, Cass Gilbert, to cover the steel towers with a granite facing. Another feature of the bridge is even more important. The design is unusual in that the towers of all previous suspension bridges have been so placed that the cables are inclined at the same slope each way from the tower. In the Hudson Bridge, foundation conditions and the requirements of navigation were such that the towers had to be placed near shore. This gave a great centre span, but short approach spans—the cables bending down sharply from the towers to the anchorages. In this design, therefore, the cables have to be securely fastened at the tops of the towers and the short, steeply inclined ends are in effect simply back-stays to prevent the great centre portion of the cables pulling the towers over. While it would appear to be good bridge aesthetics clearly to indicate this fundamental structural feature of the design in the architectural treatment of the bridge, quite the contrary has been shown in the architect's drawings. The cables apparently pass freely through openings in the top of the towers.

DETROIT-WINDSOR BRIDGE. After many delays due to difficulties in financing and lack of support both on the part of the public and railroad interests, the International Bridge across the Detroit River from Detroit to Windsor, was put under way. Contracts were let in 1928 for the cables and suspenders. The bridge will be, with approaches, about 1.7 miles long and the main span, 1850 feet, will be 100 feet greater than the Philadelphia-Camden Bridge, the longest suspension bridge in the world. It was expected that the bridge would be completed in 1930. It was finally being built as a private highway toll bridge and was to have a river clearance of 152 feet. Approach spans were to be carried on steel viaducts and therefore there will be no suspenders in the end spans of the cables. Two cables each consisting of 37 strands of 206 No. 6 galvanized specially heat-treated wires were to be used. This was the same type wire used in the Mount Hope Bridge and was furnished by the same company. (*Eng. News-Record*, September 27-28.)

MOUNT HOPE SUSPENSION BRIDGE. Another privately owned toll bridge was under construction between the mainland of Rhode Island and the island on which is located the important summer colony of Newport. A main suspended span of 1200 feet is used with side spans of 504 feet and steel viaduct approaches of cantilever design. Two 11-inch cables, each consisting of 7 strands of 350 No. 3 specially heat-treated wires were to be used. Heat treatment was being used for the first time to increase the yield point of the wire although its ultimate strength will be little affected. The anchorages of this bridge are also unusual in that they form practically no part of the architectural design but consist simply of low concrete chambers filled with sand. They are less than half the height of the approaches and one of them is located in water. (*Eng. News-Record*, April 12-28, p. 585.)

MID-HUDSON BRIDGE. An unexpected difficulty was encountered in the pier construction for the 1500-foot suspension span of this State highway bridge at Poughkeepsie, N. Y., when in July, 1927, the east caisson suddenly listed and finally tipped over to a position of $43\frac{1}{2}^{\circ}$ from the vertical. The two river piers were being built by the open-dredging process using reinforced concrete caissons, 60 by 136 feet, with 25 dredging wells. They were to be sunk over 100 feet below water. No progress was made in righting this caisson in 1927, but work during 1928 finally resulted in July, 1928, in moving this huge and heavy mass of concrete (19,000 tons) back in position. No difficulty was experienced with the west pier and the work was to go rapidly forward to completion.

STEBENVILLE SUSPENSION. This 689-foot main span suspension bridge over the Ohio River at Steubenville is of particular interest for the novel methods used in its design and construction, rather than for its size. The steel towers were built of rolled steel I-beam sections instead of the usual members fabricated by riveting from rolled shapes. Four 30-inch, two 15-inch, and one 24-inch beams were used in each tower leg. Furthermore, the strands of the two cables, each 1300 feet long and composed of 7 strands of 280 No. 8 wires, were spun on land and each strand was moved into place on a special messenger cable. Final wrapping of the strands, after squeezing them down to $8\frac{1}{2}$ -inch diameter, was not done until after the completion of the concrete bridge floor. A similar plan of land spinning, instead of the usual scheme of spinning the cables in place, was used on the 700-foot Portsmouth Suspension Bridge over the Ohio in 1927 (*Eng. News-Record*, Oct. 20, 1927) and represented a new development which resulted in cost reduction and can be successfully applied to smaller suspension structures. (*Eng. News-Record*, Aug. 30, 1928, p. 304.)

THE GREAT ARCH AT SYDNEY, AUSTRALIA. Satisfactory progress was made on the construction of this great arch which exceeded by a large margin the longest arch span in the world. This bridge (span, 1650 feet) was to carry both railroad and highway, being designed with a 56-foot roadway and for two tracks of rapid-transit and two of electric street cars. A peculiar arrangement of concrete in the lower, main body of the abutments, which take the arch thrust, is particularly interesting. The concrete was poured in separate stringers or blocks running perpendicular to the bridge axis, each block being of honeycomb cross-

section. Adjoining blocks were not poured until seven days had elapsed, so as to allow for shrinkage in setting.

THE KILL VAN KULL ARCH. Plans were published in December, 1928, for this greatest of steel arches to connect the long peninsula running south from Jersey City to Bayonne with the northern part of Staten Island in New York Harbor. A single span across the Kill van Kull of 1675 feet centre to centre of bearings will make this work, to be completed in 1931 or 1932, the greatest arch in the world. While the famous Hell Gate railroad arch of 1917 was designed for one of the heaviest loads any bridge has ever been called upon to carry (four tracks of Coopers E-60 loading), this new arch will carry only a 40-foot highway roadway and later two rapid-transit lines. For this reason the reactions of the two bridges will be about the same, and the principal members of the Kill Van Kull arch will actually be lighter than those of the Hell Gate work.

While a high-carbon steel was used at Hell Gate and was a new departure, both silicon and nickel steels will be employed to an amount exceeding 50 per cent of the total steel to be used in the new arch. The work will cost \$16,000,000. The construction of the abutments was under way and contract for superstructure had been let to the American Bridge Co. Excellent rock foundations are available within a few feet of bottom in shallow water. The War Department, however, was requiring a free passage 510 feet wide, which is not symmetrical with respect to the span, and which will complicate erection. (*Eng. News-Record*, Dec. 13, 1928, p. 873.)

THE NEWCASTLE-GATESHEAD ARCH. King George V opened the new arch span, high level highway bridge (see 1927 YEAR BOOK) over the River Tyne at Newcastle on Oct. 10, 1928. This steel-arch bridge with a span of 531 feet and a rise of 170 feet from pin centres, is the longest arch in Great Britain. With high steep banks on either side, the Tyne crossing has long been an important one, being on the Great North Road. The High Level Bridge of Robert Stephenson's, opened in 1844 by Queen Victoria, solved the problem for many years and was a notable achievement in arch-bridge construction. Its lower level was used as a highway toll bridge (the upper level is railroad), but had failed, however, to meet present traffic demands. The new bridge is municipally owned and free. One of its most interesting features is found in the use of the interior of the large abutment towers (60 by 100 feet and 90 feet high to the bridge floor) as warehouses. (*Engineering*, Oct. 19, 1928, p. 488.)

THE GRAND CANYON ARCH. The famous but difficult and dangerous Lee's Ferry, established in 1871 as a means of crossing the Colorado River just north of the Grand Canyon National Park, was replaced in 1923 by a 616-foot steel highway arch. Although the span was large, the chief interest in the design was in the influence upon it of the fact that the bridge was 130 miles from the nearest railroad station at Flagstaff, Arizona. Erection plant had to be reduced to a minimum because the entire cost had to be charged to the job as the cost of the long return haul would exceed the salvage value of the plant. A three-hinged deck arch proved to be most economical. This had to be erected from each side of the canyon rim as a cantilever, for the floor was 467 feet above water level. Parts which went into the final

structure were utilized as back-stays to support the arch during erection and the most strict economy in weight was followed in design. Half the arch was erected, a cableway was slung across to the far side of the canyon from the end of this half-arch, steel for the other half was thus transferred to the far side and the second half-arch was cantilevered out to meet in the centre. The rapid drop in temperature after sundown made quick work necessary in lowering the two half-arches to close the span. This was done by screw-jack toggles on September 12. Two auto trucks ($3\frac{1}{2}$ and 10 tons) delivered the 1200 tons of steel and other supplies, chiefly cement. The total cost was about \$300,000. The fireproof, concrete roadway 18 feet wide was designed for a 15-ton truck and the main arch for a uniform live load of 60 lbs. per square foot. (*Eng. News-Record*, Nov. 1, 1928, p. 646.)

RECONSTRUCTION OF HIGH BRIDGE. The work of replacing five of the masonry arches of this famous aqueduct bridge over the Harlem River in N. Y. (described in 1927 YEAR BOOK) by a single steel arch of about 425-foot span, was completed and the bridge reopened on Oct. 27, 1928.

An interesting view of the changes in bridge erection methods in the last fifty years is afforded by a comparison of the method used in erecting the ribs of the similar but longer arches of Washington Bridge, just north of High Bridge, and those of the new High Bridge arch. A perfect forest of timber work, built on temporary piles driven in the river bed, was used to support the former arches during erection. At High Bridge a simple steel trestle work, interfering in no way with river traffic, served not only for the demolition of the old masonry arches but also for the erection of the new span.

ARLINGTON MEMORIAL. The superstructure of this remarkable work, which has been described as an extremely costly monument with some openings in it so that the Potomac River could pass through, was started during the year. (For description of bridge see *The Military Engineer*, March-April, 1928). The construction of the piers and abutments was completed in January and work on the eight concrete arch spans was begun, the spans ranging from 166 to 180 feet. Steel centres were being used, five ribs to each span, and were assembled on barges with proper cross-bracing, etc., floated into place and set as a unit. The two haunch quarters of the arch barrel were first poured, then the centre quarters, keyblocks of $3\frac{1}{2}$ -foot width being left between each main block. The concrete work was to be completely masked by a granite facing, the great cost of the architectural treatment of this structure making it an architectural rather than an engineering work.

SNAKE RIVER CANTILEVER. Built to meet a condition somewhat similar to that at the Grand Canyon, the 700-foot light highway cantilever bridge crossing the canyon of the Snake River about 3 miles north of Twin Falls, Idaho, probably holds the record for height above the valley crossed. Its floor is 476 feet above ordinary water level or 502 feet above stream bed. It replaced steep zigzag roads which led to the valley bottom and a low level toll bridge. The bridge is a privately owned toll bridge under a 50-year franchise. The concentrated loading provided for consists of two 25-ton trucks and the uniform load of 1200 to 1700 pounds per foot on a 27-foot roadway (*Eng. News-Record*, February, 16-28).

The first motor car passed over on September 1.

THE ARTHUR KILL CANTILEVER BRIDGES. Two highway toll bridges erected by the New York Port Authority, to join Staten Island with the New Jersey mainland across Arthur Kill, were dedicated on June 20. Both are through cantilever spans with long deck-plate girder approaches. The southern bridge, with a 750-foot central span and 300-foot anchor arm side spans, crosses between Perth Amboy, N. J., and Tottenville, S. I., and is known as the Outerbridge Crossing. The northern structure, of identical type but somewhat smaller span, has been named the Goethals Bridge in honor of the famous army engineer, and crosses from Elizabeth, N. J., to Howland Hook, S. I.

THE JAMES RIVER BRIDGE. This structure, said to be the longest highway bridge in the world, across the James River at Newport News, Virginia, was opened on Nov. 17, 1928. With the Chuckatuck Creek and Nansemond River bridges and ten miles of concrete highway, it forms an important connecting link for the coastal highway system of the State. It is mostly of concrete trestle construction with I-beam stringers and has a total length of 23,150 feet. The central deep-water channel is crossed by a 300-foot steel-lift span with steel towers, with four through truss approach spans on either side. Its chief interest is in the long concrete pile and steel girder approaches, in the use of a lift span, and in its extreme length. It was built by the Turner Construction Co. for the James River Bridge Corporation and was to be operated as a toll bridge.

WESEL RAILROAD BRIDGE. The need of replacing earlier structures, still in reasonably good condition but incapable of carrying safely modern heavy bridge loads, was recognized in the reconstruction of the railroad bridge over the Rhine near Wesel. The four (334-foot) original wrought-iron, semiparabolic bowstring girders erected in 1872-74 were replaced by Rauten-type trusses (practically through double Warren trusses) continuous over two spans.

CHICOPEE FALLS WELDED RAILROAD BRIDGE. Introduced only a few years ago, arc welding was first used in 1928 in the construction of a single-track railroad bridge by the Westinghouse Electric Co. at Chicopee Falls, Mass. The bridge is on an important industrial spur track of the Boston and Maine Railroad serving the Westinghouse plant located at Chicopee. It is a Warren truss through span in which sub-divided panels were used because of the great skew of the bridge which is 72 degrees. Each truss has a span of $134\frac{1}{2}$ feet and is designed for Coopers E-50 loading. Three types of welds were used—fillet, slot, and butt. The two former were estimated for 3000 and 5000 pounds per linear inch of weld, respectively, and the latter for 13,000 pounds per square inch. The welding equipment consisted of two 200-ampere Westinghouse single-operator sets and the bridge was erected on blocking, at the side of the canal which it spans, and then moved into place. This first more or less experimental work was of great interest and appeared to indicate great possible economies in lighter steel construction should the methods employed become standard. (*Eng. News-Record*, July 26 1928, p. 120; *Ry. Age*, Mar. 24, 1928, p. 664.)

CARLTON RAILROAD-HIGHWAY LIFT BRIDGE. In addition to the lift span in the James River Bridge, already noted, an interesting lift bridge was built at Bath, Maine, to replace the old

car ferry crossing the Kennebec River. It was opened late in 1927 and is a double-deck structure 2076 feet long, with highway above and railroad below. The lift span is 234 feet with towers sufficient to give a clearance of 135 feet. A particularly notable feature of this work was the fact that a new record for depth was established in the pneumatic caisson construction used for the foundations. The famous Ead's Bridge at St. Louis had held this record for over 50 years and the new work, although slightly greater, exceeds Captain Ead's remarkable performance by only a few feet. The pier caissons at Bath were carried down to depths of 110, 114, and 118.7 feet below mean tide to which about 4.3 feet must be added for high tide conditions. An air pressure of 50 pounds per square inch was used and workmen were allowed to work for only 50 minutes at a time. Fifty pounds would appear to be about the limit of human endurance in this type of work but, while Captain Ead's had over a hundred cases of caisson disease and a dozen deaths, it has been found how to protect the workers and 50 pounds can be safely sustained for picked men with careful supervision.

ROYAL TWEED BRIDGE, BERWICK. Another bridge on the Great North Road, between Newcastle upon Tyne, where the arch already mentioned has just been completed, and Edinburgh, is at the famous Tweed Crossing. The famous old masonry arch, built in the seventeenth century, had proved too narrow and its approaches too steep and curving to accommodate modern highway traffic. The new bridge crosses the Tweed in three main arches of reinforced concrete, the spans varying from 248 to 361½ feet, and forming the largest reinforced concrete spans yet built in Great Britain. The varying arch spans were used because the floor line has a grade of 1 in 51 from Tweedmouth to Berwick. It is a long bridge, being 1378 feet with approaches. Each arch consists of four reinforced concrete ribs, which ribs are made of hollow section for the thirds of the span near the springings, while the centre third is solid. Designed for a moving load of 50 long tons on four wheels, this bridge again shows the much heavier highway loads used in British design as compared with American practice. Construction was begun in 1925 but completion was delayed because of unexpectedly difficult foundation conditions and it was not opened until May, 1928. (*Engineering*, May 4, 1928, p. 527.) This work would appear to be by far the most notable concrete bridge of a year which has not been particularly noted for structures of this kind.

HACKENSACK CROSSING ON THE LACKAWANNA RAILROAD. One of the major railroad projects of the year was the construction of long concrete approaches with a lift span over the Hackensack River, N. J., by the Lackawanna Railroad. The War Department had refused to give relief to the railroads crossing this stream by permitting them to keep their draw bridges closed during the morning and evening rush hours when suburban traffic was going to and from New York. In order to avoid these vexatious delays, the Lackawanna built this new three-track crossing at a cost of over \$3,000,000. The new work would accommodate boats requiring up to 40-foot clearance and, as these constitute 75 per cent of the river traffic, the need for frequently opening the draw will be reduced. The approaches were in large part flat-slab construction, such had been used in flat-slab

building design, supported on tall circular columns resting mainly on concrete, cast-in-place piles. The lift span is 198-feet. The entire work was being carried out without disturbing traffic which passes over the old bridge.

HACKENSACK BRIDGE COLLAPSE. On December 15 the east half or leaf of the two-leaf span by which the Lincoln Highway crosses the Hackensack River into Jersey City, N. J., suddenly collapsed. An investigation showed that the initial cause of failure was the breaking of the north tower to which the counterweight of concrete, balancing the lift leaf, was attached. This failure permitted the 770-ton concrete mass to fall upon and wreck half of the bridge. The failure was attributed to inadequate and faulty design of the parallelogram arrangement and towers for supporting the counterweight. The west half was also found to be in a dangerous and overstressed condition. Fortunately no lives were lost in this failure which it is hoped will concentrate attention on this type of design.

See also under **ARCHITECTURE, France**, description of bridge at Pluguestel.

BRIDGMAN, FREDERIC ARTHUR. American genre and historical painter, died at Rouen, France, January 13. He was born at Tuskegee, Ala., Nov. 10, 1847. From 1863 to 1866 he was a steel engraver. In the latter year he went to Paris, where he studied at the Ecole des Beaux-Arts under Gérôme. His earliest paintings were of Breton and Norman subjects. One of them is the well-known "American Circus in Normandy," in which characteristic American types among the performers are placed in interesting contrast with the French peasants who fill the seats. He visited Algiers in 1871, and thenceforth he selected Oriental subjects, making elaborate studies during extensive travels in northern Africa, Egypt, and Nubia. Bridgman's later work, though sometimes deficient in line, is characterized by brilliancy of coloring and facility of execution. He made his home in France, mainly in Paris, but frequently exhibited his paintings in the United States, and in 1891 he was elected a member of the National Academy. In 1900 he was chairman of the department of American art at the Paris Exposition. He won several medals and in 1907 was made an officer of the Legion of Honor of France. He was also a member of the Bavarian Order of St. Michael. Mr. Bridgman was talented in music and wrote several symphonies, besides other works, and he wrote books in French and in English.

BRIGHAM YOUNG UNIVERSITY. A co-educational institution at Provo, Utah, founded in 1875, and maintained under the auspices of the Church of Jesus Christ of Latter Day Saints. It comprises colleges of arts and sciences, education, commerce and business administration, applied science, fine arts, and divisions of research and extension. The 1928 summer session enrollment was 396; the autumn session enrollment, 1250; and the faculty numbered 98 members. The library contained 60,000 volumes and 45,000 pamphlets. The budget for the year was \$338,000, and a new stadium and athletic field were completed in 1928. President, Franklin Stewart Harris, Ph.D.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. An association founded in 1831, when it first met at York, composed of 13 sections, representing all branches of pure and applied science. At the annual meet-

ing which was held in Glasgow, September 5-12, more than 3000 were registered. Although nothing of a sensational nature was disclosed at the meeting, the accomplishments were of a most useful and important nature. Formal proceedings began on the evening of September 5, when Sir William Bragg took over the presidential chair occupied during the preceding year by Sir Arthur Keith. In his inaugural address on "Craftsmanship and Science," he called attention to the differences between craftsmanship of the early civilizations and the more complicated craftsmanship of modern times, and emphasized the fact that the craftsmanship of a people is an expression of the best of itself, and that while early craftsmanship centred around the individual, that of the twentieth century depends upon machinery. He called attention to the close relation between scientific knowledge and craftsmanship, to the dependence of the latter upon the former, and paid tribute to the growing number of research workers, research associations, and industrial laboratories, which, however, he considered relatively small in proportion to the need for their services and the extent to which science can be applied to industrial processes. He concluded his address with the thought that the ultimate aim of science is its function in keeping body and soul together, not to destroy the soul of a nation, and called upon the scientist to devote himself wholeheartedly to his work so that he might learn to be of use to his fellow men.

An interesting and varied programme arranged for the meeting included presidential addresses to the several sections by: Prof. Alfred W. Porter, Section A (Mathematics and Physics), on "The Volta Effect: Old and New Evidence," a subject which has long been of interest to physicists; Prof. E. C. C. Baly, Section B (Chemistry), on "Fluorescence, Phosphorescence, and Chemical Reaction"; E. B. Bailey, Section C (Geology), on "The Palaeozoic Mountain Systems of Europe and America," a natural development of the writing of Suess and Bernard; Prof. W. Garstang, Section D (Zoölogy), "The Origin and Evolution of Larval Forms," in which he selected the mollusca as a large and representative class of marine invertebrata; Prof. J. L. Myres, Section E (Geography), "Ancient Geography in Modern Education"; Prof. Allyn Young, Section F (Economic Science and Statistics), "Increasing Returns and Economic Progress"; Sir William Ellis, Section G (Engineering), "The Influence of Engineering on Civilization"; Prof. T. H. Pear, Section J (Psychology), "The Nature of Skill"; Dr. Cyril Norwood, Section L (Educational Science), "Education: The Next Steps"; Dr. J. S. Gordon, Section M (Agriculture), "The Live Stock Industry and Its Development."

On September 11, a semi-popular lecture was delivered by Sir John Stirling-Maxwell on "Forestry in Scotland: Past, Present and Future." Evening discourses to the Association were delivered by Prof. E. A. Westermarck, on "The Study of Popular Sayings," and by Professor Frederick George Donnan, on "The Mystery of Life," in which he pointed out the way in which physiology is slowly examining and reducing to quantitative measurement the various qualities and properties of the living organism.

A feature of the meeting was a special honorary graduation ceremony held on September 10, the list of graduates consisting of Sir William Bragg, Sir Thomas Holland (president elect), Dr.

Adrien Loir, who represented the Association française pour l'Avancement des Sciences; Dr. J. L. Stevens, representative of the American Association for the Advancement of Science; Prof. E. Suess; Prof. R. Zeeman; Prof. Shailer Mathews; and Prof. E. A. Westermarck.

It was announced that the 1929 meeting would convene at Cape Town, South Africa, July 22, at which time the president, Sir Thomas Holland, K.C.S.I., K.C.I.E., F.R.S., was to be installed. Other officers elected at the Glasgow meeting were: General secretaries, Dr. F. E. Smith, C.B., F.R.S. and Prof. J. L. Myres, O.B.E.; general treasurer, Sir Josiah Stamp, G.B.E.; secretary, O. J. R. Howarth, O.B.E. It was also decided to hold the 1930 meeting at Bristol.

BRITISH COLUMBIA. A Canadian province on the Pacific Ocean, lying between Alaska and Alberta. Area, 355,855 square miles; population, according to the census of 1921, 524,582 as compared with 392,480 in 1911. The census bureau estimate in 1928 was 585,000. The principal cities with their populations in 1921: Victoria, the capital, 38,727; Vancouver, 117,217; New Westminster, 14,495. The movement of population in 1926 was: Births, 9906; deaths, 5426, marriages, 4413. There is a complete system of free and non-sectarian education, ranging from primary to collegiate instruction. In 1926 there were 989 elementary schools with 2995 teachers and 89,909 pupils and 73 high schools, with 401 teachers and an enrollment of 11,779 pupils. The area of the timberland of British Columbia is estimated at more than 100,000,000 acres, containing roughly 400,000,000 feet of merchantable timber. The value of lumber, lath, shingles, and pulpwood in 1927 was \$83,087,000. The mineral resources are abundant. The value of the output in 1926 was \$67,188,842, as compared with \$60,729,358 in 1927. The leading mineral in value was lead. The other important minerals are coal, copper, gold, and silver. For figures pertaining to agriculture and manufacturing, see CANADA.

The 1926-27 budget figures showed a revenue of \$20,258,915 and expenditures of \$17,846,690. The public debt at the end of 1927 was \$75,485,736. The Government is under a lieutenant-governor and a legislative assembly of 48 members elected for five years. The province is represented in the Canadian Legislature by 6 members in the Senate and 14 members in the House of Commons. Lieutenant-Governor in 1928, Robert R. Bruce; Prime Minister, president of the council, and provincial treasurer, J. D. Maclean; Provincial Secretary, minister of mines, and commissioner of fisheries, William Sloan; Agriculture, E. D. Darrow; Education, finance, and industries, J. D. Maclean; Public Works and railways, W. H. Sutherland; Attorney-General and Minister of Labor, A. M. Manson; Lands, T. D. Pattullo.

BRITISH EAST AFRICA. A British possession covering a large area of Africa, and comprising KENYA COLONY, UGANDA PROTECTORATE, and ZANZIBAR. See these articles.

BRITISH GUIANA, gē-ā'nā. A British colony on the northeastern coast of South America, including the settlements of Berbice, Demerara, and Essequibo; bounded on the north by the Atlantic Ocean, on the east by Dutch Guiana, on the south by Brazil, and on the west by Venezuela. Area, 89,480 square miles; population, according to the census of 1921, 207,691, excluding about 9700 aborigines in the remoter

districts. An official estimate of the population in 1926 placed it at 306,844. In the same year the movement of population was: Births, 10,653; deaths, 7837. The capital is Georgetown, with a population of 57,063. Statistics on revenue, expenditure, and trade for 1925 and 1926 are:

	1925	1926
	£	£
Revenue	1,095,574	1,054,127
Expenditure	1,126,394	1,173,491
Imports	2,908,434	2,728,746
Exports	8,130,706	2,863,923

The chief pursuit is agriculture with leading products, sugar, rice, and coconuts. Stock raising is of some importance. The number of cattle in 1926 was 138,092; horses, 2190; sheep, 28,637; and goats, 15,504. The mineral resources are considerable, gold, rough diamonds, and bauxite being found in large quantities. The principal exports are sugar, rough diamonds, rice, timber, and rum; and the chief imports are flour, fertilizers, machinery and hardware, and textiles.

In 1926, 3160 vessels with a total tonnage of 1,090,806 entered and cleared the ports of British Guiana. Practically all the vessels were British and Dutch. There are 97½ miles of railroads. The colony is administered by a governor, assisted by a court of policy, consisting of seven official members and eight elected members, and a combined court, containing in addition to the above, six financial members elected by the registered voters. Governor, Sir Cecil Hunter Rodwell.

BRITISH HONDURAS, hōn-dōo'ras. A British Crown colony on the Caribbean coast of Central America, east of Guatemala, and 700 miles west of Jamaica. Area, 8598 square miles; population, according to the census of 1921, 45,317; estimated, Dec. 31, 1926, 48,584. The movement of population in 1926 was: Birth rate, 38.36 per thousand; death rate, 24.14 per thousand; marriages, 405. In 1926 there were 71 primary schools with an enrollment of 6900. The chief pursuits are agriculture and forestry although only a small part of the land is cultivated. In the higher lands good pasturage is to be found.

The chief exports are bananas, mahogany, cedar, and other forest products, plantains, coconuts, and chicle. The chief imports are clothing, cotton and silk goods, milk, flour, machinery, and hardware. The United States leads all other countries in respect both to imports and exports. The value of imports in 1926-27 was £1,042,317; exports, £808,393. The revenue in 1926-27 was £229,719 and the expenditures, £214,093. The public debt in 1926-27 was £327,559. The tonnage entered in 1926 was 316,663 tons. The administration is under a governor assisted by an executive council of six members and a legislative council of six official and seven unofficial members. Governor and Commander-in-Chief in 1928, Sir J. A. Burdon.

BRITISH INDIA. See, INDIA, BRITISH.

BRITISH MUSEUM. See ART MUSEUMS; and for *British Museum Expedition*, see ARCHÆOLOGY.

BRITISH NEW GUINEA. See PAPUA.

BRITISH NORTH BORNEO. A British colony, comprising the northern part of the island of Borneo. Area, about 31,106 square miles; population, at the census of 1921, 257,804, most of whom were Mohammedan settlers in the coast

regions and aborigines in the interior, the Europeans numbering only 533. The most numerous tribes were the Dusuns (112,287), Muruts (37,447), and the Bajaus (33,070). The chief towns are Sandakan, with a population of 11,936 on the east coast, and Jesselton, on the west coast.

Only a small part of the soil is arable. The principal products are: Timber, coconuts, rye, sago, gum, coffee, fruits, spices, gutta-percha, camphor, rattans and other forest products, and tobacco. Coal, iron, gold, and mineral oils are also to be found to some extent. The trade is chiefly carried on with Great Britain almost entirely through the ports of Hong Kong and Singapore. There is a railway 127 miles long running from Jesselton to Melalap, with a branch to Brunei Bay. Statistics of finance and trade for 1925 and 1926 were:

	1925	1926
	£	£
Revenue	399,559	434,336
Expenditure	270,022	273,119
Imports	854,399	970,319
Exports	2,083,800	1,987,233

The tonnage entering in 1926 was 429,126 tons. The territory is under the jurisdiction of the British North Borneo Company, and the administrative functions are exercised by a governor in Borneo and a board of directors in London. Governor in 1928, J. L. Humphreys.

BRITISH SOMALILAND. See SOMALILAND, BRITISH.

BRITISH SOUTH AFRICA. See SOUTH AFRICA, BRITISH.

BRITISH WEST AFRICA. The general name given to the following British colonies in West Africa; Nigeria (colony and protectorate); Gold Coast (comprising the Gold Coast colony, Ashanti, and the Northern Territories); Sierra Leone (colony and protectorate). See separate articles.

BROADCASTING. See RADIO TELEPHONY AND BROADCASTING.

BROCKDORFF-RANTZAU, brōk'dōrf-rān'-zhaw, COUNT ULRICH VON. German diplomatist, died at Berlin, September 8, while on leave of absence from his post as Ambassador to Moscow. He was born at Schleswig, May, 29, 1869. After studying law and serving in the army, he entered the German diplomatic service in 1894, holding minor posts at Brussels, St. Petersburg, Vienna, and The Hague. In 1909 he was appointed consul general at Budapest, and three years later was sent as ambassador to The Hague. In 1918 he was appointed foreign minister of the new German Republic. In May of the following year he headed the German delegation at Versailles, and, speaking before the Allied representatives, strenuously denied Germany's responsibility for the war. Refusing to accept the proposed peace terms and sign the treaty, he resigned with the Schiedemann cabinet on June 20, 1919. He became a member of the Democratic party, and was appointed, in 1922, Ambassador to Soviet Russia.

BROKERS' LOANS. See BANKS AND BANKING.

BRONSON, WALTER COCHRANE. American educator, died at Oxford, England, June 2. He was born at Roxbury, Mass., Aug. 17, 1862, and was educated at Brown University, the Harvard Divinity School, and Cornell University. He began his teaching career as professor of English

at DePauw University, 1890-92; in the latter year he became associate professor of English literature at Brown University and in 1895 he was made professor. He received the degree of Litt.D. from Colby College in 1904, and from Brown University in 1915. He wrote: *Short History of American Literature* (1900); *The History of Brown University* (1914), and edited *Poems of William Collins* (1898); *English Essays* (1905); *English Poems* (1907-10); *American Poems* (1912); *American Prose* (1916).

BROOKINGS INSTITUTION. An association established in 1927, in Washington, as the outgrowth of experimentation in research and training conducted there for some years by the Institute of Economics, the Institute for Government Research, and the Robert Brookings Graduate School of Economics and Government. The Institution is an amalgamation of these three agencies and is designed to cover eventually the entire range of social sciences, as well as to provide facilities for research and advanced research training in such subjects as economics, government administration, political relations, history, law, and social organization. It affords an opportunity for young graduate scholars to spend from one to three years in a well equipped research organization. In addition, it provides headquarters for visiting scholars from the United States and foreign countries, who come to the National Capital to make use of the great amount of material available there on economics, political, historic, social administrative, and legal problems, as found in the records of the various departments of the Government. Plans have been prepared for a group of attractive buildings to house the various activities of the Institution and an endowment of several million dollars has been assured for carrying on its work. The officers of the Board of Trustees in 1928 were: Chairman, Robert S. Brookings, the founder of the Institution; Vice chairman, Leo S. Rowe; Treasurer, Frederic A. Delano; President, Harold G. Moulton.

BROOKLYN INSTITUTE OF ARTS AND SCIENCES. An institution at Brooklyn, N. Y.; founded in 1824, composed of three divisions; Education, Museums, and a Botanic Garden. It was incorporated in its present form in 1890. Membership is open to all who are interested in any branch of science or art. The Institute is divided into the following departments, composed of members interested in a particular field: Agriculture, fine arts and architecture, astronomy, botany, dramatic art, electricity, engineering, home economics, music, pedagogy, philology, photography, physics, psychology, French language and literature. These departments conduct educational courses, addresses, lectures, and concerts. A forum conducted by the departments of political science and sociology provides for the discussion of current problems. The enrollment in the School of Pedagogy in 1928 was 1700; the attendance at lectures, 308,248; and at all other activities, 961,875. The Museum of the Institute contains collections in the fields of art, ethnology, and natural science, and the Botanic Garden comprises over fifty acres. Attendance at the Museums was 761,681; at the Botanic Garden, 1,101,653. The library contained over 26,000 volumes. In 1928 the permanent funds totaled \$2,670,413, and those to meet current expenses, \$696,680. The president of the board of trustees

was Frank L. Babbott; director of the department of education, Charles D. Atkins; of the Museum of Arts and Sciences, William Henry Fox; and of the Botanic Garden, C. Stuart Gager. Headquarters are at the Brooklyn Academy of Music, 30 Lafayette Avenue, Brooklyn, N. Y.

BROOKLYN MUSEUM. See ART MUSEUMS.
BROOKWOOD LABOR COLLEGE. See LABOR, AMERICAN FEDERATION OF.

BROWNELL, WILLIAM CRARY. American critic and author, died at Williamstown, Mass., July 22. He was born at New York, Aug. 30, 1851, and was graduated from Amherst College in 1871. He was for two years art critic of the *Nation* (New York), 1879-81, and from 1890 until his death he was literary adviser of Charles Scribner's Sons. For many years he occupied a foremost place among American critics of art and letters, and in his latter years was generally recognized as the dean of his profession. He was called the direct inheritor of the line of critics to which belonged, in England, Walter Pater and Matthew Arnold, and, in America, Emerson and Lowell. His pronouncements on literature and life, based on his comments on the works of English, American, and French writers, were widely read and were quoted as the judgments of a wise and scholarly and thoroughly informed mind. His treatment of French life was recognized as remarkably subtle and sympathetic, and of French art as very suggestive from a nonprofessional point of view. His studies of the later English prose writers have been highly praised. He was a member of the American Academy of Arts and Letters. Dr. Brownell, who received the degrees of L.H.D. (1896), Litt.D. (1910), and LL.D. (1916) from Columbia University, wrote: *French Traits*, an essay in comparative criticism (1889); *French Art* (classic and contemporary painting and sculpture, 1892); *Newport* (1896); *Victorian Prose Masters* (1901); *American Prose Masters* (1909; new edition, 1923); *Criticism* (1914); *Standards* (1917); *The Genius of Style* (1924); *Democratic Distinction in America* (1928).

BROWN UNIVERSITY. An institution of higher education at Providence, R. I., founded in 1764. In the autumn of 1928 the enrollment was 2299, of whom 275 were graduate students; 1324 undergraduate men, including 275 seniors, 246 juniors, 392 sophomores, 388 freshmen, and 23 specials; 500 undergraduate women; and 100 school of education students. The faculty of 204 included 109 professors, 37 instructors, and 58 assistants. The permanent productive funds of the University amounted to \$9,405,032, of which \$8,931,612 was an endowment of the Men's College, \$473,419 an endowment of the Women's College, and the total income from these funds was \$510,394. The library contained 350,000 volumes. Among the appointments on the faculty in 1928 were the following: Henry B. Gardner, as professor emeritus of economics; Ralph Eastman Badger, as professor of economics; Samuel McClellan Butt, as acting associate professor of philosophy; Alfonso de Salvo, as professor of Romance languages, and William Leopold Fichter as associate professor in the same department; and James Quayle Dealey, as professor emeritus of social science. In October, 1928, the Rev. Dr. Clarence A. Barbour, of the class of 1888, president of Colgate-Rochester Divinity School at Rochester, New

York, was elected to the presidency of the University, to succeed Dr. Faunce, whose retirement was to take effect in June, 1929. President, William Herbert Perry Faunce, D.D., LL.D.

BRUNEI, brōō-y'. A British region on the northwestern coast of the island of Borneo. Area, about 2500 square miles; population, according to the census of 1921, 25,444, of whom the Europeans numbered only 35, the bulk of the population being made up of Malays and native Borneans. Brunei is the chief town with a population of about 10,000. Among the principal products may be mentioned mangrove extract, rubber, coal, sago, and jelutong. Cloth weaving, silverware, brass founding, and boat building are found among the native industries. In 1927 the chief exports were cutch, coal, rubber, jelutong, and forest products; the chief imports, rice, tobacco, kerosene, oil, piece goods, and sugar. The revenue in 1926 was £42,857; expenditure, £34,754; public debt, Dec. 31, 1926, £49,525. The administration is in the hands of a British Resident, the sultan retaining the name only and with his two principal ministers receiving a subsidy from the British Government. Sultan in 1928, Ahmed Tajudin Tkhazul Khairi Wadin, a minor, who succeeded his father in September, 1924. British Resident in 1928, E. E. F. Pretty.

BRYAN TREATIES. See **ARBITRATION**, **INTERNATIONAL**.

BRYN MAWR COLLEGE. An institution for the higher education of women at Bryn Mawr, Pa.; founded in 1880. The enrollment for the autumn of 1928 totaled 494, of whom 385 were undergraduates, distributed as follows: Seniors, 61; juniors, 95; sophomores, 99; and freshmen, 128; 3 were hearers; 20 resident fellows, and 88 graduate students. The teaching staff numbered 79. The productive funds of the college amounted to \$6,481,000 in the autumn of 1928 and the income for the year 1927-28 to \$1,028,602. The number of volumes in the library was 120,500. Goodhart Hall, a students' building and auditorium was completed in June and dedicated at the close of the college year. The outstanding academic change of the year 1927-28 was the provision which permitted students to read for honors. President, Marion Edwards Park, Ph.D., LL.D.

BUCKLAND, LORD, FIRST BARON BUCKLAND OF BWLCH (HENRY SNEYMOUR BERRY). English capitalist, died at Buckland, Bwlch, Wales, May 23. He was born Sept. 17, 1877. He began his career as a school teacher, but soon became interested in finance. He was associated closely with the late Lord Rhondda in the management of his collieries. Eventually he was made chairman or director of more than fifty companies, and managed most of Lord Rhondda's business affairs. He was created Baron Buckland in 1926. He was a brother of Sir William and Sir Gomer Berry, British newspaper proprietors.

BUCKNELL UNIVERSITY. A coeducational Baptist institution of higher learning, at Lewisburg, Pa., founded in 1846 under the name of the University of Lewisburg, but renamed in 1886 in honor of its benefactor, William Bucknell. In the autumn of 1928 the enrollment was 1097, of whom 705 were men and 392 were women. Of the 318 students enrolled in the summer session of 1928, 162 were men and 156 were women. The faculty numbered 71, the productive funds amounted to \$1,700,000, and the

income for the year to \$554,000. Work was offered in liberal arts, biology, education, commerce and finance, and engineering. A new botany building with a large greenhouse, and a new dining hall for women, accommodating 500 students, were erected by the University during the year. President, Emory W. Hunt, D.D., LL.D., D.C.L.

BUCKWHEAT. The production of buckwheat in the United States in 1928, as estimated by the Department of Agriculture, amounted to 13,163,000 bushels on 750,000 acres, the average yield per acre being 17.6 bushels. In 1927 the production was 15,755,000 bushels, the area 810,000 acres and the average yield 19.5 bushels per acre. The average production for the five years ending 1928 was 13,711,000 bushels. On the basis of the average farm price of 87.6 cents per bushel on December 1, the total value of the crop of 1928 was \$11,525,000 as compared with \$13,155,000, the total value of the preceding crop with a corresponding price per bushel of 83.5 cents. The yields of the leading buckwheat growing States were reported as follows: Pennsylvania 3,802,000 bushels, New York 3,475,000 bushels, Minnesota 1,074,000 bushels, West Virginia 800,000 bushels, Michigan 720,000 bushels and Ohio 700,000 bushels. The average yield per acre in the 23 States reporting buckwheat production ranged from 9.6 bushels in Nebraska to 24 bushels in Vermont and the average farm price per bushel from 67 cents in South Dakota to \$1.05 in Vermont. The yields in New York and Pennsylvania were reduced by dry weather and frost, which also lowered the quality to some extent. During the year ended June 30, 1928, the United States exported 554,000 bushels of buckwheat and imported 3,412,000 pounds.

BUENOS AIRES. See **STRIKES AND LOCK-OUTS**.

BUILDING. A summary of building-permit values for 204 cities in the United States for the calendar year, 1928, made by *Bradstreet's* indicated that the aggregate of the permitted value in that year was \$3,237,850,759, or a decrease of 3.1 per cent from the corresponding figure of \$3,342,360,533 in 1927, of 13.6 per cent from \$3,746,102,782 of 1926, and of 16.6 per cent from the peak year of 1925 when the figure was \$3,883,172,225. While building-permit values in the City of New York gained 5.8 per cent over 1927, the total at the other cities decreased 6.3 per cent. The only increase for the year was in a Southern group of cities, amounting to 8.1 per cent, aside from a small fractional gain in the Middle Atlantic group of cities. In four of the five boroughs of Greater New York, Richmond (Staten Island) being excluded in 1928, building-permit values amounted to \$918,027,238 as compared with \$870,108,777 in 1927, and the record of \$1,031,441,405 in 1926.

The 1928 construction volume in the United States according to the F. W. Dodge Corporation's Review of Building and Engineering Activity, was the highest in its history. Contracts let on new building and engineering works in 37 large cities east of the Rocky Mountains reached a total of \$6,628,286,100 in 1928, as indicated in the accompanying table, a figure 5 per cent ahead of the total for the year 1927 and 4 per cent in excess of the total for 1926 which was the previous high record in this field. The territory covered in the 37 Eastern States represented in this survey was about 91

per cent of the total construction of the United States.

In New York State and northern New Jersey during the year 1928, there was \$1,814,316,800 worth of new contracts let on new building and engineering construction, an amount showing an increase of 8 per cent over 1927. The New England States had a total construction volume of \$495,581,000 as compared with the total of \$412,767,300 for the year 1927, an increase of 20 per cent. In the Middle Atlantic States the year's new construction was \$787,672,800 or a gain of 9 per cent over 1927. In the Central West, Illinois, Indiana, Iowa, Wisconsin, southern Michigan, Missouri, Kansas, Oklahoma, and Nebraska, new construction in 1928 was represented by contracts to the amount of \$1,934,774,900 as compared with \$1,812,848,700 for 1927, or an increase of 7 per cent. In the Northwest, Minnesota, the Dakotas, and Northern Michigan, the year's total was \$80,190,700, or a loss of 4 per cent in 1927. In the Southeastern States new construction started in 1928 reached a total of \$560,925,400, being a loss of 8 per cent from the corresponding amount in 1927. In Texas the new construction started in 1928 amounted to \$231,408,800, being a gain of 6 per cent over the amount started in 1927.

training and instruction of teachers. The State University at Sofia had 298 professors and teachers and 3062 students in 1926-27. There is also a free (private) university with 44 teachers and 2029 students.

PRODUCTION. The principal occupation of the people of Bulgaria is agriculture. The land is held in absolute freehold, the greater part of the holdings being under small proprietors (1 to 6 acres). The methods of cultivation are primitive, although in recent years some modern farm machinery has made its appearance. Preliminary results for 1927 showed an improvement over 1926 in the yield of most crops, with the exception of tobacco and corn. The smaller crop of tobacco was the effect, in part, of a reduction in sown area; in the case of corn the sown acreage was larger, but adverse weather reduced the yield. Although most crops were larger than in the preceding year, the decreases in corn and tobacco are significant because of their importance in the exports of the country; in 1927 these two products represented approximately 30 per cent of the total value of exports.

Estimates of agricultural production during 1927 (1926 figures in parentheses) are as follows: wheat, 1,288,580 metric tons (994,590);

BUILDING IN 1928
[F. W. Dodge Corporation Review]

Classification	CONTEMPLATED PROJECTS		CONTRACTS AWARDED ^a		
	Year 1928		Year 1928		
	No. of Projects	Valuation	No. of Projects	New Floor Space in Square feet	Valuation
Commercial Buildings	27,206	\$1,209,542,100	23,583	159,191,500	\$884,609,600
Educational Buildings	5,860	504,602,100	4,759	62,982,900	398,997,300
Hospitals and Institutions	1,436	214,842,400	1,141	20,004,000	164,723,200
Industrial Buildings	6,825	944,018,800	6,067	95,382,200	685,390,300
Military and Naval Buildings	287	33,923,400	178	3,752,600	15,175,300
Public Buildings	1,671	190,721,500	1,205	7,534,300	61,069,300
Public Works and Public Utilities	24,717	2,298,620,000	19,012	7,237,700	1,337,930,500
Religious and Memorial Buildings	2,862	152,144,500	2,520	15,398,300	127,947,400
Residential Buildings ^b	150,001	3,693,172,500	139,133 ^c	568,383,100	2,788,317,400
Social and Recreational Buildings	3,527	294,339,300	2,657	26,691,300	214,120,800
Miscellaneous .....	.....	.....	.....	.....	.....
Total	224,392	\$9,535,927,600	200,255	956,557,900	\$6,628,286,100

^a Include projects without general contractors, subcontracts being let directly by owners or architects.

^b 247,350 buildings.

^c 204,377 buildings.

BUILDING AND LOAN ASSOCIATIONS. See COÖPERATION.

BULGARIA. A constitutional monarchy in the Balkans lying to the south of Rumania and the east of Jugo-Slavia. Capital, Sofia.

AREA AND POPULATION. As a result of the World War, the area of Bulgaria was reduced from 53,305 to 39,814 square miles. The population according to the census of 1926 was 5,483,125 as compared with the actual population, according to the census of 1920, of 4,846,971. The chief cities with their populations, according to the 1926 census are: Sofia, 213,162; Philippopolis, 85,188; Varna, 60,787; Ruschuk, 45,672; Slivno, 29,335; Plevna, 29,063; Stara Zagora, 28,929; Choumen, 25,816; Burgas, 31,428.

EDUCATION. Primary instruction is free and compulsory for children between the ages of 7 and 14, and is supported by the State authorities. In 1926 there were 4115 national elementary schools with 12,419 teachers and 391,763 pupils and 1570 private elementary schools with 2490 teachers and 70,208 pupils. Secondary and higher schools are gymnasiums and progymnasiums, and various institutions for special

tobacco, 15,794,500 kilos (27,189,100); corn, 523,610 metric tons (693,765); barley, 305,700 metric tons (241,340); rye, 209,370 metric tons (181,195); sugar beets, 242,050 metric tons (224,895); silk cocoons, 2,025,000 kilos (1,863,360); sunflower, 35,680 metric tons (11,582); attar of roses, 504,631 miskals (282,848); (1 miskal equals 0.16953 ounces avoirdupois.) The Bulgarian production of silk cocoons for 1928 was estimated at about 1,900,000 kilos, as against 2,025,000 in 1927 and an average of about 1,520,000 for the previous five years. The smaller production in 1928 was only a casual incident, due to climatic causes, larger quantities of silk-worm eggs having been used than in 1927.

The total area sown was slightly larger in 1927 than in 1926, the increase occurring chiefly in corn and sunflower acreage. Corn acreage increased from 601,000 hectares to 653,000 hectares in 1927, and sunflower from 15,250 to 44,900 hectares, whereas tobacco decreased from 31,540 hectares to 25,640. The area sown to wheat declined from 1,046,000 to 1,018,000 hectares but other crops showed only slight changes.

The output of manufactured tobacco during the year was 4600 metric tons, as against 4690 metric tons in 1926. Nevertheless, the value returned to the State monopoly was slightly larger, amounting to 695,610,000 leva as compared with 675,941,200 leva in 1926. Production of sugar exceeded that for the previous year, totaling 38,390 metric tons as against 32,060 metric tons. Coal, the principal mineral of the country, has registered a steady increase during recent years. The output in 1927 reached 1,237,650 tons, as compared with 1,205,760 tons in 1926.

COMMERCE. Foreign trade in 1927, for the first time since 1922, showed an excess of exports over imports, the result of an increase in exports rather than a restriction of imports.

principal items were attar of roses, skins, hides and furs, nuts, and cocoons.

FINANCE. Since the war the Bulgarian budget totals have increased steadily, approximately in proportion to the decline of lev exchange. In gold value they have averaged, roughly, about 20 per cent above 1914. Under the recommendations of the finance committee of the League of Nations, a reorganization was being carried out to simplify the budget. Hitherto, it had been customary to issue extraordinary and supplementary budgets and to maintain an independent budget of special funds. It was proposed to unify these in a single statement, and to some extent this had been accomplished in the proposal for the fiscal year 1928-29. The further recommendations of the finance committee, that

FOREIGN TRADE OF BULGARIA FOR 1927

Commodity	1926		1927	
	Metric tons	Million leva	Metric tons	Million leva
IMPORTS				
Textiles and manufactures	13,096	2,101	16,801	2,459
Metals and manufactures	98,541	1,020	69,981	768
Machines and implements	15,719	840	14,769	748
Railroad cars, wagons, automobiles, etc.	{ 307 }	273	{ 232 }	109
	{ 1,835 ^a }		{ 632 ^a }	
Skins, hides, furs, and manufactures	2,880	248	3,637	324
Mineral oils, gums, etc.	55,205	234	59,158	220
Wood and manufactures	55,618	197	48,489	163
Paper and manufactures	10,528	163	11,294	167
Chemical products	12,501	158	11,381	163
Colonial goods	5,243	135	3,890	115
Stones, earth, glass products, etc.	12,360	134	14,068	128
Tannins, dyes, paints, and varnishes	4,322	124	6,115	180
India rubber, gutta-percha, and manufactures	233	69	314	72
All other	54,652	550	46,627	522
Total	341,255	6,246	306,756	6,133
Equivalent in dollars .....	.....	45,036,000	.....	44,403,220
EXPORTS				
Tobacco	27,463	2,061	26,940	2,101
Eggs	11,833	811	12,475	854
Wheat	43,706	488	14,717	163
Wheat flour	36,181	283	39,486	288
Corn	98,618	386	128,925	541
Live animals	752,141 ^b	256	1,095,588 ^b	348
Attar of roses	3,065 ^c	208	2,406 ^c	186
Skins, hides, furs, and manufactures	1,751	173	2,080	332
Cocoons	565	172	550	176
Barley	23,110	111	77,743	435
Beans	18,701	94	7,673	46
Rye	12,804	67	19,852	116
All other	124,130	507	136,433	1,042
Total	398,862	5,617	466,829	6,628
Equivalent in dollars .....	.....	40,503,000	.....	47,988,135

^a Number, ^b Head, ^c Kilos.

Germany was again the leading country of origin for Bulgarian imports, supplying 21.1 per cent of the total as compared with 21.9 per cent in 1926; Italy was second with 14.6 per cent (13.8 in 1926); followed by England, 12.1 (11.3); Czechoslovakia, 9.8 (12); and Austria, 8.2 (8.7). Exports went chiefly to Germany, which took 23.1 per cent, as against 19.5 per cent in the previous year; Austria was next with 16 per cent (7.6 in 1926); followed by Greece, 14.8 (17.4); Italy, 7.3 (12); and France, 5.7 (5.7). Imports from the United States in 1927 totaled 96,841,000 leva, as compared with 85,894,000 leva in 1926—an increase of about 13 per cent, whereas total Bulgarian imports during the year showed a slight decrease. Purchases from the United States include chiefly machines and implements, mineral oils, gums, metals, manufactures, etc. Exports to the United States were valued at 68,260,600 leva, as against 95,635,000 leva in 1926. The

expenditures should be reduced to 6,750,000,000 leva in 1928-29 and that in future the ministries should make expenditures from month to month under the budget only to the extent to which funds are actually available in the treasury, have also been adopted. With the exchange practically stable for three years, there had been a tendency to reduce estimates of expenditures.

The budget for 1928-29, as voted by Parliament, showed a decrease from the previous year in both revenues and expenditures. Revenues were estimated at 6,788,000,000 leva and expenditures at 6,747,000,000 leva, as against a balance of expenditure and income of 6,993,000,000 leva for 1927-28. Budget operations for the fiscal year 1927-28 closed with a surplus of 238,270,000 leva, after deducting extraordinary credits, according to the minister of finance. Regular budget receipts totaled 6,637,214,000 leva and expenditures 6,222,360,000 leva, or a surplus

of 464,854,000 leva, while extraordinary operations showed a deficit of 226,584,000 leva.

COMMUNICATIONS. All railways in Bulgaria are owned and operated by the State under the title Bulgarian State Railways, with the exception of a few miles owned and operated by timber companies. In 1927 Bulgaria had 1419 miles of railway of standard gauge and 232 miles of narrow gauge. The state railroads during 1927 transported 317,000 carloads, as against 313,000 carloads in 1926. During the year special efforts were made by the Government toward development of the railway system and, in a general way, of roads and communications. On Nov. 20, 1927, the 40-kilometer railway line from Lovetch to Levsky on the trunk line from Sofia to Varna was opened. Another line, about 23 kilometers in length, to connect the station of Rakovsky (on the trunk line from Sofia to Constantinople) with the town of Haskvo (on the slopes of the Rhodopes Range), was under construction. This line was being constructed from funds obtained under the refugee loan. See preceding YEAR BOOK.

The number of ships calling at the principal ports of Bulgaria in 1927 showed a decline from 1926. At Varna, 459 ships of 644,106 tons called during 1927, as against 474 ships of 645,105 tons in 1926; the respective figures for the port of Burgas were 455 of 765,036 tons, and 484 of 827,000 tons.

GOVERNMENT. The King is the head of the Government, assisted by a council of ministers nominated by him and a single legislative chamber known as the Sobranje composed of 273 members. In 1928 the King was Boris III, who succeeded to the throne upon the abdication of his father, Oct. 3, 1918. The parties in the Sobranje, elected in May, 1927, contained the following party groups: Government Coalition, 168; Agrarians, 48; Macedonian Independents, 11; National Liberals, 14; Democrats, 12; Radicals, 2; Social Democrats, 10; others, 8. The ministry as organized at the beginning of 1926 was as follows: Premier and Minister of Interior, A. Liapcheff; Education, N. Naidenoff; Justice, Dr. T. Kuleff; Commerce, T. Bobotchevsky; Finance, V. Moloff; Public Works, S. Vasileff; Ports and Railways, N. Naidenoff; Foreign Affairs, A. Buroff; Agriculture, D. Christoff; War, General Ivan Volkoff.

HISTORY. While outwardly, at least, Bulgaria seemed to pass through as quiet a year as that which prevailed in 1927, there was the continual threat of trouble at the hands of the Macedonian comitadjis who did not seem to fear the government of Premier Liapcheff to any great degree. It was felt in many sections of Europe that he was unable to cope with the Macedonian rebels and was just coasting along toward a catastrophe which might involve Jugo-Slavia which took the precaution during the year to close its frontiers to Bulgarian subjects. Bulgaria was also told by M. Briand, as president of the Council of the League of Ambassadors, that he did not believe the country was living up to the provisions of the Treaty of Neuilly with regard to disarmament. M. Briand hinted that in accordance with the terms of the treaty, an investigation might be made if the League Council deemed it necessary. No action along these lines was taken during the year, however. In the late autumn there were reports in the press, which were denied by Bulgarian authorities to the effect that the

Macedonian rebels were planning to march on Sofia in order to gain their ends.

BULGARIAN EARTHQUAKE. See EARTHQUAKES.

BULKLEY, LUCIUS DUNCAN. American dermatologist, died at Englewood, N. J., July 20. Born at New York, Jan. 12, 1845, he was graduated from Yale in 1866, and from the College of Physicians and Surgeons of Columbia in 1869. He continued his medical studies abroad, specializing in dermatology. On his return to the United States he practiced in New York City and was one of the founders of the New York Skin and Cancer Hospital, where he remained as trustee and attending physician. In 1894 he became consulting physician at New York Hospital, and was consulting dermatologist at Randall's Island Hospital, at the Hospital for Ruptured and Crippled, and at the Manhattan Eye and Ear Hospital. Dr. Bulkley was president of the New York Academy of Medicine in 1897. He wrote: *Manual of Diseases of the Skin* (1898); *Eczema and Its Management* (1881); *Acne and Its Treatment* (1885); *Syphilis in the Innocent* (1894); *Compendium of Diseases of the Skin* (1912); *Diet and Hygiene in Diseases of the Skin* (1913); *Cancer, Its Cause and Treatment* (Vol. I, 1915, Vol. II, 1917); *The Medical Treatment of Cancer* (1919); *Cancer and Its Non-Surgical Treatment* (1921); and *Cancer of the Breast* (1925).

BUNT. See BOTANY, under *Plant Diseases*.

BURMA. The largest and most easterly province of British India; since 1923, a governor's province under the Government of India Act of 1919. Area, 262,732 square miles; population (1921), 13,212,192. Kangoon, with a population of 345,505, is the capital of Lower Burma; and Mandalay, with a population of 148,917, is the capital of Upper Burma. Politically Burma is a province of British India, but geographically and socially it may be regarded as a separate unit having little in common with India proper. Being almost entirely agricultural, it does not share the rest of the country's industrial ideas. Such industries as Burma has are those essential for the preparation of its products for the market—rice mills for husking rice, sawmills for squaring its teak, refineries for oil, and cotton gins. Rice mills alone make up about three-fifths of its total industrial activity. The principal crop is rice, two-thirds of Burma's agricultural area being given to its culture. In poor years most of the crop is consumed locally, leaving but little surplus for export. The government is administered by a governor and legislative council. Governor in 1928, Sir Charles A. Innes.

BURNET, JOHN. British Hellenist, died at London, May 26. He was born at Edinburgh, Dec. 9, 1863. He studied at the University of Edinburgh and at Balliol College, Oxford. In 1888 he became an instructor at Harrow School and in 1890 was appointed a fellow of Merton College, Cambridge. From 1892 until his retirement as professor emeritus in 1926 he was professor of Greek at the University of St. Andrews. In 1925 he visited the United States as Sather Professor of Greek at the University of California, which added its LL.D. to Professor Burnet's long list of honorary degrees. He was called the foremost Greek scholar of Great Britain. He published *Early Greek Philosophy* (1892; 2d ed., 1908; 3d ed., 1920), called a most excellent treatise, and

following in general the lines of Zeller's *Philosophie der Griechen*; and *Greek Rudiments* (1897); *The Ethics of Aristotle* (1899); *Aristotle on Education* (1903); *Platonis Opera* (5 vols. 1899-1907); *Plato's Phædo* (1911); *Euthyphro*, *Apology* and *Crito* (1914); *Greek Philosophy*; *Part I, Thales to Plato* (1914); *Higher Education and the War* (1917). His *Early Greek Philosophy* was translated into German, 1913, and into French, 1919.

BUSINESS REVIEW. The year 1928, so far as the development of business is concerned, may be roughly divided into three periods, the first comprising the five months January to May inclusive, the second the months June to September, and the third the remaining three months of the year. During the first period, there was a continuation of the unfavorable condition which had developed during the latter part of 1927. Unemployment was general and severe during the forepart of the year, with many plants unoccupied or running on short time. Car loadings were low, and the total output of manufactured goods was less than average. During the second period, there was a gradual change for the better, hardly masked by the comparative midsummer quiet which usually prevails in a good many lines of business. With the opening of the autumn, business in most lines began to feel the impetus of a new demand, and to go ahead rapidly. Large orders were placed with factories in most branches of business, carloadings greatly increased, and there was a general improvement in almost every kind of distributive business. As a result, the last three months of 1928 quite fully made up for the shortages which had been developed during the forepart of the year, with the outcome that total figures for 1928, both as regards turnover, volume of production, and earnings, showed a level fully up to that of 1927, and in some cases (as particularly in the case of earnings, especially with the larger companies), very much better results than those of the preceding year. The accompanying table exhibits the tendencies of industrial production during the past few years, and shows the steady upward movement of activity during 1928 especially during the last one-third of that period.

INDEX OF INDUSTRIAL PRODUCTION
[Index numbers, adjusted for seasonal variations
1923-1925 average=100]

Month	1922	1923	1924	1925	1926	1927	1928
January	73	100	100	105	106	107	106
February	76	100	102	105	107	109	109
March	80	103	100	104	107	111	109
April	77	107	95	103	107	109	109
May	81	107	89	103	106	111	109
June	86	105	85	102	107	108	108
July	86	103	83	103	107	106	109
August	84	102	89	103	111	107	112
September	88	100	94	102	112	105	114
October	94	99	94	105	111	103	114
November	97	97	97	106	108	99	112
December	100	96	101	108	105	99	112
Annual index	85	101	95	104	108	106	110

As already indicated, the improvement in production also held good of distribution, consumptive demand being strong, so that the output of factories passed directly into actual use. Thus the chain stores and other distributing enterprises showed unusual sales and profits, while export and import business was exceptionally good, and most of the indications of business activity reported in higher figures. Comparatively little accumulation of goods was shown

by inventory and other statements at the close of the year, so that, despite the great increase in activity during the last three months, stocks, which had been small at the close of 1927, were still further reduced, the result being a correspondingly greater probability of advance in activity during the early months of 1929. It was a common observation that consuming power and disposition to buy had seldom been stronger at the close of the year than was true at the end of 1928 as was indicated by a record breaking holiday trade.

COMMODITY PRICES. At the opening of the year 1928, commodity prices had for some months past been very nearly stable. This general tendency toward stability was well maintained during the early part of the year, wholesale figures showing at first a slight falling off from the latter part of 1927 followed then by rather decisive recovery after the turning point in business activity had been reached. High point was reached in September, after which there was a slight reduction, as mass production came into full effect once more, and commodity output caught up with demand. Thereafter, and during the autumn, prices again remained substantially stable, and closed the year on a level about the same as that of the corresponding period in 1927. The actual index numbers for all commodities, with comparative figures for 1926 and 1927 were as follows:

MOVEMENT OF WHOLESALE PRICES

	1927		1928
January	96.6	January	96.3
February	95.9	February	96.4
March	94.5	March	96.0
April	93.7	April	97.4
May	93.7	May	98.6
June	93.8	June	97.6
July	94.1	July	98.8
August	95.2	August	98.9
September	96.5	September	100.1
October	97.0	October	97.8
November	96.7	November	96.7
December	96.8	December	96.7

Changes in wholesale price figures classified by groups showed that during the year the strongest upward tendencies were displayed in farm products, metals and metal products, and in foodstuffs. Special upward tendencies were registered in steel, iron, and some of the non-ferrous metals in which producers' combinations had been formed with a view to controlling the situation. The farmer was better off, not only on account of larger foreign demand, but also because of a distinct advance toward diversification of his product. Avoidance of overproduction in some branches, which had been rather unduly emphasized during preceding years, also helped him in a measure, to get a more evenly-distributed valuation for his goods. Unexpectedly large yields in some crops, which had been thought to be rather unfortunately situated, however, put the prices of farm products down during the latter part of the year, beginning with October. Thus it is only when general averages are considered, that the year 1928 can be said to have exhibited a really stable price level. See AGRICULTURE.

MANUFACTURING. For reasons already briefly indicated, manufacturing, generally speaking, was very much more active and better off than had been the case during the preceding year. Indexes of production and manufacture showed the aggregate figures already cited at the beginning of this article, while for minerals the advance was

even more striking, the composite index for minerals going from 103 in January 1928 to 114 in December. Even bituminous coal advanced from 92 to 99 while the copper output rose from an index of 102 to the index of 128. Silver, on the other hand, fell off sharply. Factory employment showed an advance of from 87.9 to 92 at the close of the year, and in some special branches, such as automobiles, the advance was very marked, the latter line advancing from 114.0 to 152. Most satisfactory was the increase in metals which advanced from a low point of about 80.9 early in the year to better than 90 toward the end of the year. Textile industries for the first time in several years seemed to show a decided turn for the better, toward the end of the year, both in cotton and in wool. The rayon industry continued to report remarkable expansion. The total number of automobiles produced was estimated at 4,630,000 as compared with 3,395,000 in 1927 and about 4,298,000 in 1926. Indexes of payrolls also showed distinct advance, the composite index for the year revealing a growth of about 5 per cent. The only classes of industry in which wages tended lower were textiles, and a few branches of mining, notably coal.

AGRICULTURE. Agriculture was in many ways more prosperous and satisfactory than for some years past. Not only was the yield of crops generally good, but the prices realized were distinctly better than those of 1927. During the fore part of the year, weather conditions were not altogether favorable, and the impression prevailed that the yield would not be good. During the summer, decided improvement took place in staples, and the autumn season was generally favorable, with the result that the yields in nearly all crops were above forecasts, while the price-increase was more evenly distributed among the major crops than in former years. The total value of fifty principal crops as estimated by the Department of Agriculture was about \$8,456,052,000 a decrease of \$65,511,000 or only 0.8 per cent below the preceding year of 1927. See **AGRICULTURE**.

Changes in farm values of principal crops were officially given as follows:

Crop	Change from 1927 to 1928 in			Thousands of dollars
	Physical Production	Per cent	Value	
Corn	+ 2.8	++ 6.8	++	135,232
Oats	+ 22.6	++ 11.5	++	60,912
Cotton	+ 10.9	++ 1.7	++	21,704
Cottonseed	+ 11.0	++ 9.4	++	19,997
Barley	+ 34.3	++ 9.4	++	16,928
Apples	+ 49.5	++ 8.0	++	15,732
Oranges	+ 37.3	++ 4.6	++	15,700
White potatoes	+ 14.9	-- 35.7	--	138,698
Wheat	+ 2.8	-- 10.5	--	102,620
Hay	+ 14.1	-- 5.6	--	79,798
Tobacco	+ 13.3	-- 1.0	--	2,560
Total, 50 crops..	+ 3	-- 0.8	--	66,511

In several of the Northwestern States, where a one-crop system had exerted an injurious effect for many years past, very decided betterment was noted as the outgrowth of a more rational system of cultivation.

Partly owing to this growth of diversification, and partly to the greater prosperity of farmers, resulting from the better general conditions and higher prices, sales of merchants in the country districts were very much more satisfactory than in the preceding year, while payments were more promptly met. The liquidation of obligations due

TOTAL NUMBER OF COMMERCIAL FAILURES IN THE UNITED STATES AND DOMINION OF CANADA, WITH ASSETS AND LIABILITIES, FOR FOUR YEARS, AS REPORTED TO "BRADSTREET'S"

	Number of Failures					Assets					Liabilities				
	1928	1927	1926	1925	1924	1928	1927	1926	1925	1924	1928	1927	1926	1925	1924
New England States ..	2,383	2,275	2,279	1,971	1,971	\$14,184,826	\$16,961,066	\$17,746,521	\$12,115,812	\$39,065,612	\$40,832,503	\$43,590,438	\$40,832,503	\$31,350,012	\$31,350,012
Middle States	5,570	4,435	4,452	4,282	4,282	46,521,157	69,225,118	47,165,494	46,912,532	128,861,382	139,244,743	139,244,743	109,980,954	106,210,149	106,210,149
Western States	4,537	4,478	4,166	4,177	4,177	62,150,869	75,146,693	61,728,112	58,707,012	105,583,119	124,134,134	124,134,134	103,646,990	105,595,327	105,595,327
Northern States ..	1,454	1,911	2,111	1,930	1,930	82,073,770	47,991,395	89,865,489	61,542,292	92,260,249	143,369,312	79,936,205	143,369,312	92,430,909	92,430,909
Southern States	4,295	5,178	4,937	4,493	4,493	108,078,300	151,838,474	146,612,071	60,777,397	162,920,502	218,619,158	218,619,158	224,820,630	106,294,611	106,294,611
Far-Western States ..	2,131	1,990	2,079	2,006	2,006	15,873,230	24,491,115	16,992,131	21,630,577	30,904,065	47,606,197	47,606,197	32,583,931	37,761,982	37,761,982
Totals, United States	20,870	20,267	20,024	18,859	18,859	278,382,152	385,043,861	379,709,818	261,685,622	517,603,929	653,130,925	653,130,925	655,228,320	479,643,200	479,643,200
N. Y. C., Man. & Bronx only	1,459	1,096	1,141	1,260	1,260	9,873,925	9,943,705	9,763,306	12,843,362	32,400,623	27,170,685	27,170,685	32,433,462	31,502,914	31,502,914
Canada and Newfoundland	1,874	2,016	2,106	2,114	2,114	14,219,852	10,668,801	11,868,750	14,692,537	39,565,384	26,288,262	26,288,262	28,422,743	35,877,991	35,877,991

to banks, which had made considerable progress in 1927, was still further advanced during 1928. One result was to bring about a substantially better banking situation, with a very great reduction in the number of failures, especially among country banks, the number, 49, being the lowest for several years past.

GENERAL BUSINESS. General business showed an excellent condition, taken as a whole, for the year. While the first three months was unsatisfactory, on account of the continued depression in manufacturing to which reference has already been made, the loss of ground was quite speedily made up during the latter part of the year. Federal Reserve indexes of wholesale distribution, although reflecting a falling off up to the middle of the year, thereafter showed a strong improvement, with increasing indexes up to the end of December. Among the lines which reflected particularly good increase in purchasing power were foodstuffs, women's clothing, hardware, and furniture. The better distributive demand was also reflected in earnings. Compilations made by the Federal Reserve banks of some two hundred representative corporations showed a large gain as compared with 1927 amounting to near 35 per cent in the final quarter. As in 1927 the improvement in earnings was far from regular, the greatest gains being found in those particular branches of business which were under the control of price combinations or in public utilities whose returns were independent of changes in prices. The tendency toward stability or decline of prices naturally helped such concerns quite materially. Thus the railroads showed an increase of about \$100,000,000 over 1927, partly the result of more intensive operation of their mileage, and partly the result of very decided improvements in management and operation. For the year as a whole, the net revenues of class 1 railroads which were \$1,085,485,000 advanced to \$1,193,133,741, an increase of about 10 per cent, reflecting a very similar condition in general business upon which, of course, the roads are dependent for their own prosperity.

BUSINESS FAILURES. A striking feature of the financial and economic situation of recent years has been afforded by the high percentage of business failures which has made itself apparent, and which represents the squeezing out of small businesses, either through mergers, absorptions, or actual collapse through bankruptcy. Many factors are now tending to enlarge the size of the business unit, and the tendency to a high failure ratio furnishes a good index of the intensity of the movement. The heavy mortality among the smaller enterprises continued unabated, and while there was a decided slowing up of failures among small banks for special reasons, this was an exception to the general rule of susceptibility to causes tending to wipe out the weaker enterprises. The general facts in the situation are set forth in the table on page 123.

See AGRICULTURE; BANKS AND BANKING; FINANCIAL REVIEW, TAXATION, UNITED STATES, ETC.

BUSSES, MOTOR. See AUTOMOBILES; RAILWAYS.

BUTLER, THOMAS S. American Congressman, died at Washington, D. C., May 26. He was born in Chester County, Pennsylvania, Nov. 4, 1855, and was educated at the Normal School, West Chester, Pa. He was admitted to the bar of Chester County, and for several years was judge of the Fifteenth Judicial District of

Pennsylvania. He was elected to the national House of Representatives in 1897; at the time of his death he was the oldest member of the house in point of continuous service. Mr. Butler was chairman of the House Naval Affairs Committee and one of the foremost advocates of military preparedness for National defense.

BUTTER. See DAIRYING.

BYRD ANTARCTIC EXPEDITION. See POLAR RESEARCH.

BYRNE, DONN. (BRIAN OSWALD DONN-BYRNE). Irish-American novelist, died in an automobile accident near his home in Ireland, Coolmain Castle, Bandon, County Cork, June 18. He was born at New York, Nov. 20, 1889, of Irish parents sojourning temporarily in America. He was educated at University College, Dublin, and at Paris and Leipzig. On his return to New York he was connected with the New York Sun and the Brooklyn Daily Eagle. Even though Donn Byrne said of his own writing, "Its faults are because I cannot write better yet," and though that was perhaps true, he caught, in his contributions to magazines and in his books, a beauty which is haunting and elusive. He was called sometimes "the last of the traditional Irish story-tellers." He wrote: *Stories Without Women; The Strangers' Banquet; The Foolish Matron; The Woman God Changed; Messer Marco Polo; The Wind Bloweth; Changeling; Blind Raftery and His Wife; O'Malley of Shanganagh; Hangman's House; Brother Saul, and Cousader, Destiny Bay.*

CADORNA, kâ-dôr'nâ, MARSHAL COUNT LUIGI. Commander of the Italian Army during the World War, died at Bordighera, Italy, December 21. Born at Pallanza, in 1850, the son of Gen. Raffaele Cadorna, he was graduated from the Turin Military Academy in 1868, and entered the Army. Commissioned colonel in 1892, he became commander of the Tenth Regiment of Bersaglieri, and chief of staff of the Army of Florence. He was made major general in 1898, and put in command of the divisions at Naples in 1907, and at Genoa in 1910. The following year he was named commander of the Army in case of war, and later, as chief of the general staff, he undertook to prepare the Army for participation in the World War. When Italy entered the war in May, 1915, Marshal Cadorna's objectives were to protect the northern frontier of Italy, and to cross the Isonzo River and capture Trieste; he accomplished the former plan, but was unable to succeed in the offensive. The Italians captured Görz, however, in 1916, and advanced over the Corso plateau toward Trieste, but on Oct. 21, 1917, the German and Austrian lines, strengthened by troops recalled from Russia, began a counter attack toward Caporetto, forcing the Italian Army, which had not received the expected Allied support, to retreat. When the Central armies advanced as far as the Piave River, Marshal Cadorna, who before the defeat had been considered an inspired strategist, was succeeded by Marshal Armando Diaz, in December, and transferred to the military council at Versailles. Having been subsequently declared, by an investigating commission, largely responsible for the defeat, he was retired with the rank of lieutenant-general in February, 1918. After the War feeling grew calmer, and it was recognized that the weakness was not in an individual, but in the fact that, previous to the battle of Caporetto, there had been insufficient coöperation

between the Allied forces. Animosity toward Marshal Cadorna ended when Mussolini, who had become dictator Oct. 3, 1922, created the rank of Field Marshal, in order to honor Cadorna and Diaz alike. Once more active in military affairs, Marshal Cadorna worked until his death for the reorganization of the Army.

CAISSONS. See BRIDGES.

CALIFORNIA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 3,426,861. The estimated population on July 1, 1928, was 4,556,000. The capital is Sacramento.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928.

Crop	Year	Acreage	Prod. bu.	Value
Hay	1928	1,804,000	5,284,000 ^a	\$75,538,000
	1927	1,796,000	5,332,000 ^a	65,946,000
Barley	1928	1,044,000	31,842,000	22,926,000
	1927	994,000	27,335,000	25,422,000
Wheat	1928	780,000	16,380,000	19,328,000
	1927	812,000	13,642,000	16,098,000
Rice	1928	133,000	8,073,000	7,104,000
	1927	160,000	8,960,000	10,804,000
Cotton	1928	223,000	155,000 ^b	15,112,000
	1927	130,000	91,000 ^b	9,555,000
Corn	1928	75,000	2,400,000	2,520,000
	1927	77,000	2,464,000	2,661,000
Potatoes	1928	56,000	7,728,000	5,023,000
	1927	52,000	7,956,000	7,558,000
Sweet potatoes	1928	12,000	1,152,000	1,267,000
	1927	12,000	1,080,000	1,242,000
Oranges	1928	.....	31,000,000 ^c	102,300,000
	1927	.....	23,000,000 ^c	92,000,000
Grapes	1928	.....	2,331,000 ^c	34,848,000
	1927	.....	2,406,000 ^c	54,336,000
Peaches	1928	.....	25,752,000	12,559,000
	1927	.....	20,500,000	10,675,000
Dry beans	1928	250,000	4,425,000	19,470,000
	1927	296,000	4,825,000	13,028,000

^a tons, ^b bales, ^c boxes.

MINERAL PRODUCTION. Third in rank among the States as a mineral producer in 1926, California maintained in 1927 a high productivity in petroleum, the source of fully half its total value of mineral output. The value of petroleum fell, however, while the output increased, so that the aggregate value of the 1927 petroleum product was less. Petroleum produced was, for 1927, 230,752,000 barrels, and for 1926, 224,673,000; in value, \$280,000,000 (estimated) for 1927 and \$345,547,000 for 1926. The yield of natural gas in 1926, the latest reported year, was 204,915,000 M cubic feet; in 1925, 187,789,000. In value, the yield was, for 1926, \$35,495,000; for 1925, \$32,587,000. From natural gas were made 489,700,000 gallons of gasoline in 1927, as against 389,366,000 in 1926; in value \$44,955,000 for 1927 and for 1926, \$45,945,000. Cement production increased for 1927, to 14,580,654 barrels, from 13,842,483 for 1926. Cement shipments were valued at \$26,623,396 for 1927, or slightly more than for 1926, when they were \$25,299,245. Clay products, only little less valuable in the yearly aggregate than cement, reached a total of \$20,569,492 in 1926, the latest year of record, as against \$21,324,844 in 1925. Production of metals was: gold, 1927, 564,585 fine ounces, 1926, 581,700; in value, 1927, \$11,671,018, 1926, \$12,024,800; silver, 1927, 1,620,240 fine ounces, 1926, 1,977,956; in value, 1927, \$918,677, 1926, \$1,234,244; copper, 1927, 27,133,003 pounds, 1926, 33,466,299; in value, \$3,554,424 (1927) and \$4,685,282 (1926); lead, 2,718,014 pounds (1927), 8,094,000 pounds (1926); in value, \$171,235 (1927), \$647,481 (1926); zinc, 8,062,625 pounds (1927), 20,434,000 (1926); in value,

\$516,008 (1927), \$1,532,542 (1926). Stone production in 1926 was \$10,546,571. Sand and gravel output was somewhat less than this, but important in the aggregate, \$8,820,047. Borates were produced in 1926 to \$2,796,700, and salt and slate each to considerable totals. The total mineral production of the State for 1926 was \$523,352,257; for 1925, \$496,923,376.

For 1928, the production of gold, silver, copper, and lead attained a combined value of \$15,470,000. No zinc mines were operated in 1928. All metals were produced to less value than in 1927. The 1928 gold production, about 524,300 fine ounces, had a value of \$10,838,000; silver production, about 1,504,000 ounces, in value \$880,000; copper about 25,000,000 pounds, in value \$3,650,000; lead about 1,675,000 pounds, in value \$102,000.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the United States Department of Commerce, were: for maintenance and operation of governmental departments, \$60,409,900 (of which \$22,964,209 was for local education); for public service enterprises, \$2,046,169; for interest on debt, \$4,839,056; for permanent improvements, \$14,235,821; total, \$81,530,946 (of which \$16,087,711 was for highways, \$6,214,284 being for maintenance and \$9,873,427 for construction). Revenues were: \$88,944,960; property and special taxes furnished 20.4 per cent thereof; department earnings and remuneration for State services, 7.1 per cent; license sales and gasoline taxation, 57.1 per cent. No general property tax was levied, other revenue more than covering expenditure. Net State funded debt on June 30, 1927, was \$105,876,476. Of outstanding bonds \$66,500,000 were highway debt.

TRANSPORTATION. The total mileage of railroad line under operation on Jan. 1, 1928, was 8263.96. There were built, in 1928, 12.62 miles of second track and 0.12 mile of third track.

EDUCATION. The four-year training course for elementary public school teachers was adopted, as reported by Superintendent of Public Instruction Cooper in the *Journal* of the National Education Association, and while the requirement was to take effect starting with 1930, it was made effective upon the incoming first-year students of the State teacher colleges. The enrollment of pupils in the public schools of the State in the academic year 1927-28 was: Kindergarten, 76,899; elementary, 675,815; junior high school, 97,760; high school, 436,231; junior college, 7981. Expenditure for public-school education in 1925-26, the latest reported year, was \$145,593,683.19. Salaries of teachers averaged, in 1926-27: kindergarten, \$1734; elementary, \$1739; junior high school, \$2267; high school, \$2377.

CHARITIES AND CORRECTIONS. A State Department of Social Welfare, co-existing with other institutional bodies, was created in 1927, and was intrusted with duties of inspection and related functions, over county jails, six State hospitals, numerous county hospitals, two State prisons, three training schools, and many homes for children, the aged and the disabled. Under the administration of the Department of Institutions were: Agnew's State Hospital, Agnew; Industrial Home for Adult Blind, Oakland; Mendocino State Hospital, Talmage; Napa State Hospital, Imola; Norwalk State Hospital, Norwalk; Patton State Hospital, Patton; Pacific Colony, Padra; Sonoma State Home, Eldridge; Stockton State Hospital,

Stockton; Ventura School for Girls, Ventura; Whittier State School, Whittier; Preston School of Industry, Ione. Under the State Board of Prison Directors were the State prisons at Folsom and at San Quentin. State prisoners on Jan. 1, 1928 numbered 6328; admittances to State prison in 1927, 2050. The prison population formed 1.4 to 1000 of the entire population of the State.

POLITICAL AND OTHER EVENTS. The fiscal system of the State was disturbed in the course of the year by court decisions adverse to the legality of some taxes and by prospects of suits for tax refunds. The State Supreme Court ruled on March 8, that an act of 1925 reducing the assessment on foreign stocks and bonds, for tax purposes, to 7 per cent of market value was unconstitutional. The apprehended effect of this decision was to drive the securities affected out of the State or into hiding, as the alternative to their being subjected to much higher valuations. An amendment of 1927 to the above law, designed to fix the tax on foreign securities at \$1.45 for each \$100 of book value, was also voided by the Court. The State Tax Commission prepared a programme of tax legislation in the course of the year, with a view to the prospect of a special legislative session to deal with the subject. In litigation brought by a Santa Cruz theatre owner, Superior Court Judge Lucas on June 21 ruled that the Cartwright anti-trust law, contested by a group of film producers, was unconstitutional.

The newly created State Park Commission approved in April a plan for increasing by many thousands of acres the system of State parks; the lands needed were to be acquired with funds subscribed in half by voluntary contribution and in half by a bond issue of \$6,000,000, to be approved by a popular vote. Among the areas sought for park land were some of the chief privately owned stands of redwood and of sequoia, and notably the 6120-acre Calaveras Grove, north of the Yosemite National Park. In connection with the park programme, the Governor in April addressed to the Federal Secretary of the Interior a request that some 80,000 acres of Federal land in Southern California, including Red Rock Canyon and the Devil's Garden, be withdrawn from public entry with a view to possible sale to the State. An initiative petition was launched in May to bring to a popular vote in the autumn a proposal to construct at the cost of approximately \$40,000,000 a double twenty-foot highway between San Francisco and Los Angeles. The State Reapportionment act passed in 1927 was kept inoperative by a provision for a referendum on the subject, which had been attached to the measure in passage. Los Angeles interests, opposing the referendum, sought to have it declared void in the courts. The site for a proposed State hospital for drug addicts was selected in March at Pomona.

Difficulties of the Sutter Basin Company, an enterprise largely controlled by the late J. Ogden Armour, having for its object the reclamation of some 55,000 acres of California land, led to the offer of members of the Armour family to redeem \$6,000,000 of special assessment warrants against the land, in the interest of a reorganization.

At a special election in San Francisco on May 1, the proposal to complete the Hetchy

Hetchy water system and to effect a municipal purchase of the Spring Valley distribution system was carried by more than the needed two-thirds majority. The estimated cost to the city was \$65,000,000. The obligations of the city under the Federal Raker Act, granting the city rights in the Hetchy Hetchy Valley and certain other portions of the Yosemite National Park in connection with the water development, were disputed by the city in June, the city objecting to building automobile highways in the water supply area, as likely to lead to the pollution of the watershed by campers. Initial steps were taken in the building of the Civic Opera House designed as the War Memorial of San Francisco.

The water development of Los Angeles suffered a serious reverse in the breaking on March 13 of the municipal water supply dam known as the San Francisquito Dam, on the Santa Clara River. The break released without warning twelve billion gallons of water, which swept down the valley causing the loss of more than 400 lives and damage estimated at \$10,000,000. The city met damage claims by authorizing special issues of bonds for the purpose. An investigating committee appointed by the city council rendered an opinion on April 10 that the collapse of the dam had been caused by its resting on a defective foundation. Work on a flood control dam of the city water system at Big Dalton was halted for a time after the San Francisquito disaster, for further study of the base rock conditions, but was later resumed. The new Los Angeles City Hall was completed in April and dedicated April 24. A white stone structure, it consists of a relatively low building of four stories occupying an entire block, surmounted by a setback superstructure of six stories and a tower of massive proportions, rising some 15 stories above the superstructure, and capped by a stepped pyramid, surmounted by an electric beacon visible for 60 miles, designed as a guide for aviators. A new \$4,000,000 plant of the Pacific Goodrich Rubber Company, for the manufacture of tires, was put into operation at Los Angeles on May 1.

For floods in Sacramento Valley, see **FLOODS.**

ELECTION. The State as a whole was strongly Republican in its vote on the National election of November 6. The vote cast for Hoover and Curtis was approximately twice that for Smith and Robinson. The popular vote for President was reported as: Hoover (Rep.), 1,162,323; Smith (Dem.), 614,356. There was considerable sectional diversity in the vote, however, San Francisco giving a slight plurality for Smith. Hiram W. Johnson was reelected United States Senator for the ensuing regular term. The State's entire delegation in the United States House of Representatives, 10 Republicans and one Democrat, were reelected. There were submitted to the voters a long list of 21 constitutional amendments, initiative measures and bond issue proposals. The most conspicuous of these, a measure to abolish the existing boxing commission and put an end to the permitted ten-round boxing bouts, was heavily defeated. In San Francisco were further submitted 41 local propositions, of which the majority were defeated. Measures to provide a city planning commission and a war memorial were carried by slight margins. The State reapportionment plan rendering repre-

sentation by counties paramount in the State Senate was carried.

OFFICERS. Governor, C. C. Young; Lieutenant-Governor, H. L. Carnahan; Secretary of State, Frank C. Jordan; Treasurer, Charles G. Johnson; Comptroller, Ray L. Riley; Attorney-General, U. S. Webb; Adjutant-General, Richard R. Mittelstaedt; Surveyor-General, W. S. Kingsbury; Superintendent of Public Instruction, William J. Cooper; Librarian, Mabel R. Gillis; Legislative Counsel, Fred B. Wood; President of the Railroad Commission, E. W. Decoto; Chairman of the Industrial Accident Commission, Will J. French; Commissioner of Insurance, Charles R. Detrick; Chairman of the Highway Commission, Ralph W. Bull; Director of the Department of Agriculture, G. H. Hecke.

JUDICIARY. Supreme Court: Chief Justice, William H. Wastie; Associate Justices, William H. Langdon, John W. Preston, Jesse W. Curtis, Emmet Seawell, John E. Richards, John W. Shenk.

CALIFORNIA, UNIVERSITY OF. A coeducational institution of higher learning at Berkeley, Calif., with branches in various parts of the State: University of California at Los Angeles, with the colleges of letters and science, and education; branch of the college of agriculture at Davis; citrus experiment station and graduate school of subtropical horticulture at Riverside; Scripps Institution of Oceanography, La Jolla; Lick Observatory, Mount Hamilton; and agricultural stations at Mountain View, Cortena, and in the Imperial Valley. The number of full-time resident students in courses leading to degrees, on Nov. 1, 1928, was 16,959, of whom 8717 were women and 8242 were men. The university extension division had, in 1927-28, an enrollment of 35,467 in classes and 6692 in correspondence schools. The enrollment in the summer sessions of 1928 was 10,288. At the beginning of the autumn term there were approximately 1500 members on the regular teaching staff and 700 on the extension staffs. The endowment funds for 1927-28 amounted to \$13,280,313, and the income for the year to \$532,251. Gifts for the year approximated \$500,000. The library contained about 1,000,000 volumes. Four buildings on the new campus of the University at Los Angeles were brought near to completion, at a cost of \$3,000,000; and a fifth was to be completed when the institution is moved in the summer of 1929. At Davis an animal science building was completed, the cost being \$300,000; and a new power plant, costing \$40,000, was constructed. On the Berkeley campus, Bowles Hall for men, the first dormitory at the University of California, was completed at a cost of \$350,000. Work was started on the Life Sciences Building, to be the largest used for academic purposes in the United States, and costing more than \$2,000,000. Plans for a new infirmary for students, to cost approximately \$500,000, and for an International House, to cost \$1,750,000, were completed, while an announcement was made of plans for a fine arts group and auditorium, to be the gift of a friend of the University, and to cost more than \$1,000,000. The western entrance of the Berkeley campus, along the main axis, was improved at an expense of \$100,000, and approximately eight acres of land were added to the southwestern portion of the campus for athletic purposes, at a cost of about \$1,500,000. An engineering build-

ing to cost about \$500,000 was planned for 1929. President of the university, William Wallace Campbell, Sc.D., LL.D.

CALMETTE SERUM. See TUBERCULOSIS.

CALVERT, THE REV. DR. JOHN BETTS. American Baptist clergyman, and president of the American Seamen's Friend Society, died at New York, January 12. He was born at Preble, N. Y., Aug. 29, 1852. He was graduated from the University of Rochester, 1876, and from the Union Theological Seminary, 1879. He was principal of the high school, McLean, N. Y., 1871-72, was licensed to preach in 1875, and was ordained in the Baptist ministry, 1880. After several years' service as assistant pastor of the Calvary Baptist Church, New York, he bought *The Baptist Weekly*, changed its name to *The Christian Inquirer* and was one of its editors until its consolidation with *The Examiner* in 1895. He remained as one of the editors of *The Examiner* until 1912. Shurtleff College conferred on him the degree of D.D. in 1894 and Colgate University in 1915. He became a trustee of the American Seamen's Friend Society in 1900, and was president of the society from 1911 until his death. Dr. Calvert wrote: *The Impartial Christ* (1915); *Men Who Have Meant Much to Me* (1918); *Ministering in a Wide Field* (1922).

CAMBODIA. A French protectorate of Indo-China lying to the north of Cochinchina, west of Annam, and south of Laos and Siam. Area, 67,550 square miles; population at the census of 1926, 2,535,178, of whom 1901 were Europeans (excluding the military forces). Pnom-Penh, with a population of 81,712 is the capital, and chief town. The soil is very fertile but only a comparatively small area is under cultivation. The chief product is rice, its annual export amounting to about 250,000 tons. The other products include cotton, pepper, kapok, salt fish, hides, cattle, coffee, sugar, and iron. The imports of 1926 were valued at 68,009,173 francs and the exports at 26,253,000 francs. The budget for 1927 balanced at 10,838,089 piastres. Nominal king, Monivang, who succeeded his father Aug. 9, 1927. Cambodia is one of the five component states of French Indo-China. See FRENCH INDO-CHINA.

CAMEROON or CAMEROONS. See KAME-
RUN.

CAMP FIRE GIRLS. An organization primarily for the adolescent girl. Its purpose is to "seek beauty, give service, pursue knowledge, be trustworthy, hold on to health, glorify work, and be happy." The programme evolved to carry out these aims was planned to take care of the out-of-school time of girls, and practically every wholesome activity which would naturally engage the interest of the young girl is included. These activities are grouped under the seven crafts which form the basis of the system of honor and awards which is used: home craft, health craft, hand craft, camp craft, nature lore, business craft, and patriotism and citizenship. Distributed among these crafts are about seven hundred *honors* which the girls may earn as steps toward the winning of the three progressive ranks. The Camp Fire Honor System, which is based on the theory that if a thing is worth doing it is worth doing with one's whole heart, makes use of symbolism and ceremony and ritual. Each girl upon joining Camp Fire selects a name for herself which expresses some ambi-

tion or ideal. The three ranks of Wood Gatherer, typifying loyalty to organization and group, Fire Maker, the ideal of wider loyalty to Mankind and God, and Torch Bearer, which is the highest rank, the desire to pass on undimmed to others that light which has been given to her, symbolize the taking on of certain responsibilities and carrying out certain desires.

Among the outstanding activities of the year was the making of new clothes and making over of old clothes to replenish the emergency supplies of the Red Cross and the Needlework Guild which had been exhausted due to the many disasters which occurred during the year. The response was universal and resulted in the contribution of thousands of beautifully made garments to the Red Cross and Needlework Guild. The girls also continued the tree planting project begun in 1927, which resulted in the planting of over 200,000 trees. A permanent national

tion are located at 41 Union Square, New York.

CANADA. A dominion of the British Empire in North America, bounded on the north by the Arctic Ocean, on the south by the United States, and on the east and west by the Atlantic and the Pacific oceans, respectively. Capital, Ottawa.

AREA AND POPULATION. The total area is placed at 3,798,123 square miles, of which 3,654,200 is land area and 142,923 water area. It consists of nine provinces, each with its own parliament and administration, and two territories, viz., the Northwest Territories and Yukon Territory, each under a commissioner, assisted by a council. According to the census of 1921, the total population was 8,788,483, as compared with 7,206,643 in 1911.

The accompanying table from the *Canada Year Book* for 1927-28 shows the areas of the provinces, etc., with the population at recent censuses:

Province	Land area sq. miles	Water area sq. miles	Total area sq. miles	Population, 1901	Population, 1911	Population, 1921
Prince Edward Island	2,184	.....	2,184	103,259	93,728	88,615
Nova Scotia	21,068	360	21,428	459,574	492,338	523,837
New Brunswick	27,911	74	27,985	331,120	351,889	387,876
Quebec	690,865	15,969	706,834	1,648,898	2,005,776	2,361,199
Ontario	365,880	41,382	407,262	2,182,947	2,527,292	2,933,662
Manitoba	231,926	19,906	251,832	255,211	461,394	610,118
British Columbia	243,381	8,319	251,700	178,657	392,480	524,582
Alberta	252,925	2,360	255,285	73,022	374,295	588,454
Saskatchewan	353,416	2,439	355,855	91,279	492,432	757,510
Yukon	206,427	649	207,076	27,219	8,512	4,157
Northwest Territories	546,522	7,500	554,022	20,129	6,507	7,988
	218,460	9,700	228,160			
	493,225	34,265	527,490			
Royal Canadian Navy .....	.....	.....	.....	.....	.....	485
Total	3,654,200	142,923	3,797,123	5,371,315	7,206,643	8,788,483

tree planting honor was also adopted. New camps were established in Fargo, N. Dak.; Worcester, Mass.; Oakland, Calif.; Long Beach, Calif.; and Battle Creek, Mich.; while many of those already established were improved with new buildings and additional property. Training courses were held in different parts of the country to meet the growing demand for trained leaders; and the First Camp Fire National Council was held at Denver, Colorado. Miss Florence Hughes was elected president; Jay B. Nash, of New York, first vice president; Dr. Joseph Ray-

The principal cities with their populations in 1921 were: Montreal, 618,506; Toronto, 521,893; Winnipeg, 179,087; Vancouver, 117,217; Hamilton, 114,151; Ottawa, 107,843; Quebec, 95,193; Calgary, 63,305; London, 60,959; Edmonton, 58,821; Halifax, 58,372; St. John, N. B., 47,166; Victoria, 38,727; Windsor, 38,591.

The following table from the *Canada Year Book* for 1927-28 shows the vital statistics of population for recent years (the registration area of Canada excludes Quebec and the Territories):

	Years	Births	Birth rate per 1,000	Marriages	Rate per 1,000	Deaths	Rate per 1,000	Excess of births over deaths	Rate natural increase per 1,000 population
Canada (registration area)	1922	164,194	25.1	47,811	7.3	69,028	10.5	95,166	14.5
	1923	156,897	23.7	49,102	7.4	70,182	10.6	86,834	13.1
	1924	157,595	23.4	47,538	7.1	66,197	9.8	91,398	13.6
	1925	154,509	22.6	47,151	6.9	66,419	9.7	88,090	12.9
	1926	150,040	24.8	48,743	7.1	70,067	9.6	79,973	12.0
	1927	88,749	37.6	18,659	7.9	33,433	14.1	55,316	23.4
Quebec "	1922	88,377	35.1	16,609	6.5	33,459	13.3	54,918	21.8
	1923	83,579	32.2	17,361	6.3	35,148	13.6	48,431	18.6
	1924	86,980	35.1	17,591	7.1	32,356	13.0	54,574	22.0
	1926	82,165	32.1	17,827	7.0	37,251	14.5	44,914	17.9
Canada (exclusive of the Territories) .	1921	257,728	29.3	69,732	8.0	101,155	11.6	156,573	17.8
	1922	252,571	27.8	64,420	7.1	102,487	11.3	150,084	16.5
	1923	240,476	26.1	66,463	7.2	105,330	11.4	135,265	14.7
	1924	244,525	26.5	65,129	7.1	98,553	10.7	145,972	15.8
	1926	232,205	24.8	66,570	7.1	107,318	11.4	124,887	14.9

* Rates for Quebec have been calculated on provincial estimates of population.

croft, Princeton, N. J., second vice president; Charles Robbins, of Chicago, third vice president. Dr. Myron T. Scudder, New York, treasurer; and Lester F. Scott, secretary and national executive. The headquarters of the organiza-

During the year 1928, 166,782 immigrants arrived in the Dominion of Canada, an increase of 7898 over 1927. The number of immigrants during the fiscal year 1926-27, as reported by the Dominion Minister of Immigration and Coloni-

zation, was 143,991. The principal nationalities represented include:

British-English	30,935
United States of America	21,025
Scotch	16,728
German	15,222
Ruthenian	10,061
Irish	11,553
Polish	6,704
Magyar	4,941
Finnish	5,268
Jewish	4,863
Slovak	4,284
Norwegian	4,627
Italian	3,466
Swedish	3,321
Jugo-Slav	2,102
Belgian	2,149
Dutch	2,243
Scandinavian-Danish	2,255
Welsh	1,627
Croatian	1,087
Russian	1,296

The occupational classification was given as: Farming, 81,954; labor, 8915; mechanics, 9838; trading, 5358; mining, 1364; female domestics, 13,557; other classes, 23,005. The British Empire Settlement scheme, from its inception to Jan. 31, 1927, cost the Dominion Government \$1,146,887; \$474,000 of this was contributed for passage loans and \$667,000 for passage grants. Other expenses not recoverable account for the remainder.

The population of the Dominion of June 1,

DOMINION OF CANADA EDUCATIONAL STATISTICS—1926

Provinces	Year Ended	Schools *	Teachers	Pupils	Expenditure Dollars
Ontario	Dec. 31, 1925	Elem. } Sec. {	7,527	17,880	677,452
Quebec	June 30, 1926				
Nova Scotia	June 30, 1925		7,857	19,122	499,027
New Brunswick	July 31, 1926		1,768	3,320	112,391
Manitoba	June 30, 1926		1,444	2,525	80,769
British Columbia	June 30, 1926		1,862	4,067	148,279
P. E. Island	June 30, 1926		1,068	3,396	101,688
Alberta	June 30, 1926		471	616	17,324
Saskatchewan	June 30, 1926		3,041	5,135	148,245
	June 30, 1926		4,686	4,864	213,404
Total			29,754	60,925	1,998,579
					122,701,259

* Where possible the number of schoolhouses is given, and elsewhere the number of school districts with schools in operation.

1927, was officially estimated to have been 9,519,220, an apparent increase of approximately 730,737 over the 1921 census. The only parts of the Dominion for which gains were not calculated was the Province of Prince Edward Island and the Yukon Territory. A 1928 estimate put the population at 9,658,000. According to municipal statistics for 1925, the population of some of the principal Canadian cities in that year was as follows: Montreal, 907,500; Toronto, 556,691 (1926); Winnipeg, 191,356 (1926); Vancouver, 128,350; Quebec, 124,341; Hamilton, 122,238; and Ottawa, 119,254 (1926).

The religious denominations in the order of

their numerical importance in 1921 were: Roman Catholics, Presbyterians, Anglicans, Methodists, Baptists, Lutherans, the Greek Church, Jews, Mennonites, and Congregationalists. Of these 3,389,636 were Roman Catholics, 1,409,407 Presbyterians, 1,407,994 Anglicans, and 1,159,458 Methodists. See CANADA, UNITED CHURCH OF.

EDUCATION. The control of education in the Dominion is directly in the hands of the provinces. The individual articles dealing with the provinces contain the latest available statistics on education for those provinces. Statistics for Canada as a whole are given below.

Higher education in Canada is carried on in 23 universities and 82 colleges, including 21 classical colleges in Quebec. Of the universities six are state controlled (New Brunswick, Toronto, Manitoba, Saskatchewan, Alberta, and British Columbia); four are undenominational (Dalhousie, McGill, Queen's, and Western); while the remainder are denominational. The 23 universities had 4126 professors, etc., and 44,483 students in 1925-26 and the 82 colleges had 20,791 students enrolled in the same year. Some of the better known denominational colleges include: King's, Acadia, and St. Francis Xavier in Nova Scotia; Mt. Allison in New Brunswick; Laval and Bishop's College in Quebec; and McMaster and Ottawa in Ontario.

AGRICULTURE, ETC. In 1926 there were 57,099,000 acres of arable land (about 3 per cent of the land area) and 9,308,000 acres of pasture. The aggregate value of all field crops in 1926 was \$1,104,983,000 and \$1,134,193,000 in 1927, of which the principal crops were wheat, \$439,340,000; oats, \$225,879,000; hay, alfalfa, and clover, \$206,781,000. Including animal products, gross farm income represents an annual value of \$1,750,000,000. The official estimate of Dec. 14, 1928, placed the value of principal field crops for that year at \$1,054,000,000. The accompanying table from the *Commerce Year Book* for 1928 shows statistics of the principal field crops.

CROPS: AREA, PRODUCTION, AND YIELD PER ACRE

Crop	Area (thousands of acres)				Production (thousands of units—bushels, except as indicated)				Yield per acre (bushels)	
	1908-1913	1921-1925	1926	1927	1908-1913	1921-1925	1926	1927	1921-1925	1927
Wheat	9,945	22,320	22,896	22,460	197,119	374,024	407,186	440,025	16.8	19.6
Rye	117	1,428	750	743	2,094	20,900	12,179	14,951	14.6	20.1
Barley	1,573	3,133	3,647	3,506	45,275	82,010	99,987	96,938	26.2	27.6
Oats	9,597	15,008	12,741	13,240	373,666	510,170	407,379	467,195	34.0	35.3
Corn	309	293	210	132	17,297	12,974	7,818	4,262	44.3	32.3
Mixed grain	502	844	980	1,005	16,254	29,205	35,345	37,622	34.6	37.4
Linseed	1,035	827	738	476	12,040	7,050	5,995	4,885	8.5	10.3
Potatoes	483	611	523	572	77,873	91,558	78,227	77,430	149.8	135.4
Hay, alfalfa, and clover	8,423	10,481	10,927	11,136	12,284	15,439	17,032	19,527	1.5	1.8
Fodder corn	292	651	580	471	2,762	5,746	4,721	3,548	8.8	7.5

* 1910-1913, * Unit, short ton.

Toward the close of the year, the total wheat crop for 1928 was officially estimated at 500,613,000 bushels (spring wheat, 481,647,000 bushels), with the average yield of 20.8 bushels per acre. The substantial reduction from earlier estimates (550,482,000 bushels) was accounted for by frost and hail damage, which affected both yield and grade, particularly in Saskatchewan and Alberta. Nevertheless, this crop was the largest Canada had ever harvested, and the final return to farmers was expected to equal, if not exceed, that for 1927. An abundance of the lower grades suitable for feed was expected to react favorably on supplies of cattle and hogs. The yield of oats, 437,505,000 bushels, and of barley, 134,452,000 bushels, compare with similar crops in 1927 of 439,712,000 and 90,938,000 bushels respectively. The estimated value of the principal field crops for 1928 was \$1,051,043,000, a decline of 7.3 per cent from 1927.

The *dairying* industry of Canada is carried on most extensively in Ontario and Quebec, although there are dairy factories in all of the provinces. According to the *Canada Year Book* for 1927-28 there were in 1926, 1269 creameries, 1418 cheese factories, 334 combined butter-and-cheese factories, and 26 condensed-milk factories. The total value of all products of dairy factories for 1926 was \$137,379,998 as compared with \$141,406,623 in 1925. The output of Canadian dairies for 1927, according to the Dominion Bureau of Statistics, amounted to \$133,927,256. Creamery butter increased to 178,438,013 pounds valued at \$66,070,160 in 1927, as compared with 177,209,287 pounds worth \$61,753,390 in 1926. Factory cheese output decreased, amounting to 138,026,861 pounds in 1927 valued at \$25,517,355, or 33,704,770 pounds and \$3,290,486 less than in 1926.

The total production of Canadian *maple sugar* for the 1928 season was 13,798,109 pounds worth \$2,269,686, and 1,686,583 gallons of maple sirup valued at \$3,314,902, a total production valued at \$5,584,588. Of this total the Province of Quebec produced 13,090,029 pounds of sugar worth \$2,094,405 and 909,646 gallons of sirup worth \$1,510,012, a total value of \$3,604,417.

Fruit Farming. Many portions of Canada are admirably adapted for this industry, the best known being located in Nova Scotia, New Brunswick, Ontario, and British Columbia. Of orchard fruits apples are most important, and in number of trees and quantity of production greatly exceed all others combined, although peaches, pears, plums, cherries, and small fruits are grown in abundance. Extensive vineyards also exist. According to the *Canada Year Book* for 1927-28 the production of the more important fruits in 1926 with the value was as follows: Apples, 2,984,230 barrels, \$15,776,222; pears, 214,010 bushels, \$567,127; plums and prunes, 319,130 bushels, \$520,182; peaches, 226,465 bushels, \$527,663; cherries, 180,345 bushels, \$557,266; strawberries, 8,618,500 quarts, \$1,809,885; raspberries, 2,722,500 quarts, \$653,400; other berries, 1,925,800 quarts, \$346,644; grapes, 38,400,000 pounds, \$1,920,000.

In 1926 33,356 acres were under *tobacco* (chiefly in Ontario and Quebec), and the production was 28,824,000 pounds valued at \$7,379,000.

The *livestock* census for June, 1927, showed 9,172,000 cattle, 4,695,000 swine, 3,264,000 sheep, 3,422,000 horses, and (1926) 49,641,472 poultry. The total production of eggs for 1926 was 237,-

080,399 dozens, valued at \$66,198,285. The wool-clip for the same year was 17,180,270 pounds, valued at \$3,780,000.

FISHERIES. In addition to an immense salt-water fishing area, Canada has approximately 220,000 square miles of fresh water abundantly stocked with many species of excellent food fishes. The Dominion Bureau of Statistics stated the value of production of the fisheries of Canada for the year 1927 as \$49,460,600. This figure represents the value of the fish marketed, whether sold for consumption fresh, or canned, cured or otherwise prepared. Compared with the year 1926 a decrease of \$6,900,033, or 12 per cent, was shown in the value of the product. The value in 1927, however, was higher than any one of the years 1920 to 1925 and was the fifth highest in the history of the industry, the year 1926 being the third highest.

The four principal kinds of fish, viz., salmon, lobsters, cod, and halibut, all showed decreases, both in quantity caught and in value marketed. The catch in salmon amounted to 1,541,447 cwt., a decrease of 639,023 cwt., or 29 per cent; lobsters 316,831 cwt., a decrease of 22,752 cwt., or 7 per cent; cod, 1,987,803 cwt., a decrease of 755,061 cwt., or 28 per cent; and halibut, 329,032 cwt., a decrease of 10,886 cwt., or 3 per cent. The total marketed value of these four kinds of fish was \$29,656,013, a decrease of \$7,765,496. Herring is fifth on the list of principal kinds of fish and showed an increase in catch and in marketed value. The principal items of prepared fish are canned salmon with a total pack in 1927 of 1,363,235 cases, a decrease of 703,583 cases; canned lobsters, 113,937 cases, a decrease of 9582 cases; canned sardines, 240,091 cases, an increase of 22,499 cases; dried cod, 447,656 cwt., a decrease of 179,241 cwt; and dry-salted herring, 1,048,615 cwt., an increase of 109,968 cwt.

The value of the vessels, boats, gear, etc., used in the primary operations of catching and landing the fish in 1927 was \$26,783,340, an increase over the preceding year of \$2,760,966, or 11 per cent. The number of men employed in the primary operations was 63,303 compared with 61,371 in 1926. The number of fish-canning and curing establishments in operation in 1927 was 776, with a total capital investment of \$24,364,385, compared with 831 establishments and a capital of \$28,868,071 in 1926. The number of lobster canneries was 438, a decrease of 17; the number of salmon canneries, 81, an increase of two; of sardine and other fish canneries, six, an increase of four; of fish-curing establishments, 203, a decrease of 48; and of reduction plants, 33, an increase of 10. The number of persons employed in the establishments was 16,817, compared with 17,408 in 1926.

FORESTS. It has been officially estimated that the total area of land covered by forests is 1,227,000 square miles. Less than 40 per cent of this area, however, is covered with commercial timber. The most important timber areas are in Northern Ontario, Quebec, and British Columbia. In 1926-27 the value of manufactured wood and paper exports was \$175,237,502. The greater part of the export went to the United States, which took more than 86 per cent of the exportable surplus in 1926-27. The Crown forests belong to the provincial governments, except in Manitoba, Alberta, and Saskatchewan, and the railway belt (40 miles wide) in British Columbia, where they belong to the Dominion.

FUR INDUSTRY. Canada ranks third as a raw fur producing country, being exceeded only by the United States and Russia. The value of production during 1926-27, the last year for which figures were available, was \$18,833,977, which represented the highest valuation since the post-war period of expansion. The comparable figures for preceding years were: 1925-26, \$15,072,244; 1924-25, \$15,441,564; and 1923-24, \$15,643,817. The increased value of the 1926-27 production was attributable primarily to the higher prices paid for the principal Canadian skins. Although there were decreases in the number of the principal kinds of pelts taken, the total of all kinds increased from 3,686,148 to 4,289,233, attributable to a very large extent to a gain of 807,283 in the number of rabbit skins produced. This pelt, however, is one of the least valuable and the total value of annual production amounted to only \$123,753.

It has always been the practice of the trappers to keep foxes caught in the warm weather, alive, when possible, until the winter season, for then the fur is prime and consequently much more valuable. From this custom has arisen the modern industry of fur farming. Several other ani-

MINERAL PRODUCTION. A new high record for mineral production in Canada was set in 1927, when the value of the output reached \$244,520,098, marking a gain of \$4,090,000 or 1.7 per cent over the previous year's record total of \$240,437,123. New output records for all time were established in gold, copper, lead, and zinc among the metals, and in coal, cement, lime, and gypsum in the non-metal and structural materials field. Value for natural gas and petroleum production also exceeded any recorded in previous years. Increased outputs, in comparison with the totals for 1926, were noted in the figures for arsenic, cobalt, copper, gold, lead, nickel, platinum metals, zinc, coal, natural gas, petroleum, gypsum, pyrites, clay products, cement, limestone, and gravel.

The following table supplied by the Dominion Bureau of Statistics shows the values of production for metals, fuels, and non-metals, clay products and other structural materials for the years 1907, 1912, 1917, and 1922 to 1927 inclusive.

The preliminary figures covering the mineral production of Canada for 1928 indicated that

VALUES OF MINERAL PRODUCTION OF CANADA BY CLASSES, 1907, 1912, 1917, AND 1922-1927

Year	Metallic	Non-Metallic Fuels and other non- metallics	Structural materials and clay products	Total
1907	\$42,426,607	\$31,275,546	\$12,863,049	\$86,865,202 *
1912	61,172,753	45,080,674	28,794,869	135,048,296
1917	106,455,147	63,354,363	19,837,311	189,646,821
1922	61,785,707	82,976,794	39,534,741	184,297,242
1923	84,391,218	91,936,732	37,751,381	214,079,331
1924	102,406,528	71,796,009	35,380,869	209,583,406
1925	117,082,298	71,851,801	37,649,234	226,583,333
1926	115,237,581	85,240,144	39,959,398	240,437,123
1927	113,135,582	88,498,024	42,886,492	244,520,098

* Total includes \$300,000 allowed for products not reported.

mals are being raised in captivity, notably the mink, raccoon, skunk, marten, fisher, beaver, and muskrat, but more important than all of the rest combined is the silver fox. Fox farming was carried on in all the provinces of the Dominion, and the latest figures available, for 1926, showed 2523 fox farms in Canada with a total of 51,612 animals, 47,657 being silver foxes.

Before the World War London was the principal market for Canadian furs. In the post-war years, however, the United States had supplanted the mother country in this trade and now takes the major portion of the pelts exported from Canada. During the year ended March, 1928, of a total of \$24,315,244, shipments to the United States were valued at \$14,335,751, and to the United Kingdom, \$9,185,200. Negligible quantities went to other countries.

that year would establish a new high record in output, both in volume and in value. The Dominion Bureau of Statistics estimated such production at \$271,000,000, an increase of 10 per cent over 1927 and for a third successive year establishing a high record. Nickel amounted to 93,789,000 pounds as against 66,799,000 pounds in 1927 and copper was 191,944,000 pounds, as compared with 140,147,000 pounds in 1927.

MANUFACTURES. The value of Canadian manufactures increased markedly since 1921. The ten leading manufacturing industries are pulp and paper, flour and grist-mill products, slaughtering and meat packing, saw mills, butter and cheese, automobiles, electric light and power, rubber goods, cotton yarn and cloth, and sugar refineries.

SUMMARY OF STATISTICS OF MANUFACTURES

Year	Estab- lish- ments	All em- ployees	Wage- earners	Value of products, thousands of Canadian dollars	Value added by manufac- ture, thou- sands of Canadian dollars	Primary horse power, thousand
1910 *	19,218	515,203	.....	1,165,976	564,467	.....
1917	22,838	621,694	552,968	2,873,268	1,332,181	2,889
1920	23,351	609,586	526,571	3,772,250	1,686,978	3,576
1922	22,541	474,430	398,390	2,482,209	1,198,434	3,612
1923	22,642	525,267	446,994	2,781,166	1,311,025	3,762
1924	22,178	508,503	432,273	2,695,054	1,256,644	4,300
1925	22,381	544,225	466,602	2,948,545	1,360,880	5,083
1926	22,708	581,527	499,703	3,247,803	1,519,279	.....

* Establishments with 5 hands and over; all establishments for other years shown.

According to an estimate prepared by *The Financial Post*, of Toronto, Canadian revenue from productive industries in 1928 attained the record total of \$6,840,278,995, representing an increase of about 8 per cent over the previous year. Agriculture, forestry, fishing, trapping, mining, electric power, construction, and manufactures all brought additional revenues to Canadian producers, although crop income was lower. On the basis of these factors alone the per capita income of British Columbia amounted to \$926; Ontario, \$908; Alberta, \$732; Saskatchewan, \$641; Manitoba, \$553; New Brunswick, \$438; Nova Scotia, \$372; and Prince Edward Island, \$344. Alberta was the only province to show a decline from the previous year, because of poor wheat yield. These figures indicated that the western provinces provided the best markets. Expansion of manufacturing in Ontario was calling forth prosperity in that province, although in Quebec the newsprint situation was an adverse factor.

With additions of 222,000 horse power in 1927 the total of Canadian hydroelectric installations amounted at the end of 1927 to 4,778,000 horse power or nearly double the total at the end of 1920. The outstanding developments of the year included the completion of a high-voltage transmission line from Isle Maligne to the city of Quebec, 135 miles, and progress on the construction of the Ontario Hydroelectric Power Commission's line from the Gatineau River in Quebec to Toronto, 200 miles. Among all countries Canada ranked next to the United States in the amount of developed water power, and the hydroelectric current generated was greater per capita than in the United States. The potential capacity of water powers at ordinary minimum flow was estimated at 18,255,000 horse power. The capacity of installed water turbines in 1926 was 4,556,000 horse power as compared with 975,000 in 1910 and 2,508,000 in 1920. Considerable quantities of electric current were exported from Canada to the United States, the amount in 1926 being 1,359,000,000 kilowatt-hours. A large proportion of factory machinery is operated by electricity. The factories, apart from central electric stations, had in 1924 prime movers of 1,282,000 horse power.

Bank clearings during 1928, particularly the gain in the western cities reflected general prosperity on the Dominion as well as operations upon the stock exchanges. Statistics of bank clearings in six important Canadian cities for the years 1927 and 1928 were:

City	1927	1928	Per cent Increase
Halifax ...	\$ 160,582,910	\$ 185,678,418	16
Montreal ...	6,771,872,658	8,072,843,473	19
Toronto	6,484,985,731	7,674,864,018	18
Winnipeg ...	2,794,528,268	3,443,151,986	23
Calgary	436,380,849	666,517,874	53
Vancouver ..	924,784,859	1,109,375,640	20

COMMERCE. According to the condensed preliminary report of the trade of Canada for 1928, compiled by the Minister of Trade and Commerce, the total trade of Canada for the fiscal year ended Mar. 31, 1928, was valued at \$2,359,412,000, compared with \$2,298,466,000 in 1927, and \$2,256,029,000 in 1926; the increase over 1927 amounting to \$60,946,000 or 2.2 per cent, and over 1926 to \$103,383,000 or 4.6 per cent. Imports in 1928 show a decided improve-

ment over 1927 and 1926, while exports show a decline. Imports in 1928 amounted to \$1,108,956,000, compared with an importation in 1927 valued at \$1,030,893,000, and in 1926 at \$927,329,000; the increase in the imports over 1927 amounting to \$78,063,000 or 7.3 per cent, and over 1926 to \$181,627,000 or 19.6 per cent. Export trade (domestic and foreign combined) was valued at \$1,256,456,000 in 1928, at \$1,267,573,000 in 1927, and \$1,328,700,000 in 1926; the decrease in 1928 compared with 1927 amounting to \$17,117,000 or 1.4 per cent, and compared with 1926 to \$78,244,000 or 5.9 per cent. The domestic exports of Canada in 1928 totaled \$1,228,208,000, in 1927, \$1,252,158,000, and in 1926, \$1,315,356,000; the decrease in 1928 compared with 1927 amounting to \$23,950,000 or 1.9 per cent, with 1926 to \$87,148,000 or 6.7 per cent. For the calendar year 1928 imports were valued at \$1,220,317,000 and exports at \$1,349,751,000. The imports from the United States totaled \$825,740,612 an increase of 16.8 per cent over 1927.

TRADE WITH THE UNITED STATES. Canada's total trade with the United States during the year ended Mar. 31, 1928, was valued at \$1,216,090,000, compared with a similar trade in 1927 valued at \$1,166,357,000, and in 1926 at \$1,094,570,000; the increase over 1927 being \$49,733,000 or 4.4 per cent, and over 1926, \$121,520,000 or 11.1 per cent. In 1928 Canada's imports from the United States were valued at \$719,443,000, in 1927 at \$687,022,000, and in 1926 at \$608,618,000; the increase in 1928 compared with 1927 amounting to \$32,421,000 or 4.7 per cent, and with 1926 to \$110,825,000 or 18.2 per cent; whereas the total exports to the United States amounted to \$496,647,000 in 1928, to \$479,335,000 in 1927, and to \$485,952,000 in 1926; the increase of 1928 over 1927 being \$17,312,000 or 3.6 per cent, and over 1926, \$10,695,000 or 2.2 per cent. The exports of Canadian produce to the United States in 1928 totaled \$478,006,000, in 1927, \$466,422,000, and in 1926, \$474,987,000; the increase in 1928 compared with 1927 amounting to \$11,584,000 or 2.5 per cent, and with 1926 to \$3,019,000 or 0.7 per cent.

FINANCE. The budget proposals for the fiscal year ending Mar. 31, 1929, as presented to Parliament on February 16, by the Finance Minister, included reduction of the income tax payable by corporations to 8 per cent, a reduction in the sales tax from 4 to 3 per cent, and important revisions in the tariff schedules, mostly downward. It also proposed to reduce the income tax payable by individuals by 10 per cent and to increase the personal exemption of individuals with dependents. The total revenue for the fiscal year 1928-29 was estimated at \$419,480,000; estimated expenditures were \$364,665,000.

Although the figures for the 1927-28 budget on page 133 are estimates, the actual totals for that year did not show much variation. The total receipts were \$429,701,000 and the total ordinary expenditures, \$336,168,000.

Collections of customs duties and excise taxes of the Department of National Revenue amounted to \$340,750,625 during 1928 as compared with \$319,288,477 during the previous year. This represents an increase of about 7 per cent.

A statement of the department of finance at Ottawa showing the fiscal condition of the Do-

GOVERNMENT RECEIPTS AND EXPENDITURES
[Thousands of Canadian Dollars]

	1925- 26, actual	1926- 27, actual	1927- 28, budget
Ordinary receipts	380,746	398,696	412,580
Customs	127,355	141,969	153,800
Excise	42,924	48,513	57,000
War-tax revenue:			
Income tax	55,572	47,386	55,300
Sales, checks, transportation, etc.	98,097	105,613	88,000
Miscellaneous taxes ..	3,627	3,167	3,170
Canals	921	(*)	(*)
Post office	30,334	29,069	31,000
Interest on investments ..	8,535	8,559	10,190
All other	13,381	14,420	14,320
Special receipts	2,148	1,757	6,900
Ordinary expenditures ..	320,660	319,548	333,730
Debt charges	131,576	129,675	128,700
National defense	10,717	13,086	15,950
Pensions	37,199	37,903	39,380
Public works, chargeable to income	13,416	11,178	15,500
Railways and canals, chargeable to income ..	3,038	(*)	1,369
Post office	30,500	31,007	32,250
Soldiers' civil reestablishment	7,706	6,977	6,820
Subsidies to Provinces ..	12,375	12,517	12,517
All other	74,133	77,205	81,244
Special expenditures	6,521	4,958	7,115
Capital expenditures	16,798	19,559	21,405
Loans and advances, non-active	11,206	11,569	2,415

(*) Included under "All other."

minion as of Aug. 31, 1928, gave the funded debt as \$2,395,664,000, as compared with \$2,480,752,000 on Aug. 31, 1927—a reduction of more than \$85,000,000. The total liabilities of the Dominion were \$2,740,656,000, a decrease of more than \$41,000,000. The total net debt was \$2,229,574,400 a decrease of \$6,107,000 from July 31 and a decrease of \$54,471,000 from Aug. 31, 1927. The total amount of notes of the Federal Government and chartered banks in circulation August 31 was \$196,838,205; provincial notes aggregated \$27,623. The Minister of Finance held \$76,898,498 in gold on that date against the notes in circulation and \$2,999,082 against savings banks deposits.

SHIPPING. The merchant marine on June 30, 1927, consisted of 896 vessels of 1,255,231 gross tons. The number of vessels entered in the foreign trade for the fiscal year ended Mar. 31, 1927, was 21,382 of 23,224,000 tons (with cargo); cleared, 20,923 vessels of 22,925 tons (also with cargo). The statistics for coastwise trade, including rivers and lakes, showed arrivals of 92,222 vessels of 43,125,000 tons and departures of 90,814 vessels of 42,617,000 tons.

RAILWAYS. About one-half of the railway mileage of Canada is operated by the Government as the Canadian National Railways System. In 1926 this system operated 22,681 miles of line, carried 22,240,000 passengers and 74,156,000 short tons of freight, and had gross receipts of \$275,570,000. The principal private railway is the Canadian Pacific, which in 1926 operated 14,894 miles of line, carried 13,560,000 passengers and 33,593,000 short tons of freight, and had gross receipts of \$198,026,000. The accompanying table covers data for all steam railways.

The year 1928 was marked by the exceedingly rapid construction of the new Hudson Bay Railroad and its connecting line to the Flin Flon mine. On the Hudson Bay Railway steel was being laid at a rate of about one mile a day. The engineers intended to continue the work

throughout the entire winter, whenever feasible, and confidently expected to have the road completed to within 20 miles of the Fort Churchill terminal by April, 1929. (See preceding YEAR BOOK.) Although extensive grading work was necessary over the last 20 miles it was expected that trains would be running to Fort

STATISTICS OF RAILWAYS

	1913 ^a	1923	1926
Length of line.....miles..	29,304	39,665	40,352
Length of all tracks...do...	38,223	51,936	54,279
Locomotives.....number..	5,119	5,897	5,679
Passenger cars.....do...	5,696	6,785	6,848
Freight cars.....do...	182,221	229,614	221,255
Average capacity			
.....short tons..	32.1	36.4	36.8
Passengers carried			
.....thousands..	46,186	44,834	42,686
Passenger-miles...millions..	3,266	3,076	2,999
Freight carried			
.....1000 short tons..	106,993	118,290	122,477
Ton-miles.....millions..	23,033	34,068	34,153
Train-miles.....thousands..	67,320	61,346	60,176
Car-miles.....millions..	1,593	2,195	2,288
Gross receipts ^b			
....\$1000 Canadian..	256,703	478,338	493,600
Passenger service...do...	74,432	119,627	117,831
Freight service....do...	174,686	339,984	359,855

^a Year ended June 30. ^b Including miscellaneous receipts not shown separately.

Churchill by August, 1929. The Manitoba & Northern Railway, extending from the Hudson Bay road to the Flin Flon mine, a distance of about 90 miles, was completed on September 22, three months before the time specified in the contract. The contractors were paid a bonus of a quarter of a million dollars for this extremely rapid work. Early completion was stressed because of the necessity of transporting 25,000 tons of material for the construction of a power plant at Island Falls from Flin Flon to the site of the plant by a winter road 65 miles in length. The initial development at the new plant will be about 36,000 horse power and it will cost \$7,000,000.

NEW RAILWAY CONSTRUCTION—1928

Nova Scotia	0.27 ^a
Quebec	1.30
Ontario	15.00
Manitoba	146.10
Saskatchewan	333.30
Alberta	226.90
Total, Canada	722.87

^a Second track.

The construction of new railway lines in Canada according to the *Railway Age* (New York) showed a marked increase in 1928 over 1927, amounting to 723 miles, as compared with 310 miles in the preceding year, an increase of 413 miles, or 133 per cent. This increase was greater than that for any year since the outbreak of the World War stopped all construction activities in 1914. Of the 1928 total, the Canadian National built 291 miles and the Canadian Pacific 378 miles, principally in the Western provinces. The Hudson Bay Railway was extended 59 miles, and the branch to the Flin Flon mining district from a connection with the Hudson Bay near the Pas, Man., 87 miles, was completed.

Total carloadings for the year 1928 were 2,053,095, or 9 per cent higher than 1927. The 1928 figures established a record.

On Mar. 31, 1926 there were 378,269 miles of highway of which 323,629 miles were earth and 47,177 were gravel, and the remainder concrete and macadam. The number of motor vehicles in 1927 was 950,000, of which 841,000 were passenger cars and 109,000 were trucks and busses. Tourist traffic was estimated to have increased 50 per cent during 1927 and in all probability added in excess of \$200,000,000 to Canadian income. An official estimate of tourist traffic compiled in 1927 by the Dominion Bureau of Statistics credits the United States with all but \$5,000,000 of the total 1926 tourist expenditure of \$190,000,000. This was approximately twice the expenditure in 1920. In 1927 there were 12,440 post offices; in 1926, 52,961 miles of telegraph line and 3,306,214 miles of telephone wire, and 1,201,008 instruments in use.

GOVERNMENT. Executive power is exercised in the King's name by the Governor-General of Canada, acting through a responsible ministry or cabinet. Legislative power is in a Parliament of two houses: a Senate and a House of Commons, the former consisting of 96 members appointed for life and the latter of 245 members in accordance with the distribution act of 1924, elected for five years (unless sooner dissolved) by popular vote, including woman suffrage. Women are eligible for election to Parliament. The Governor-General in 1928 was Viscount Willingdon. As a result of the election of Sept. 14, 1926, the House of Commons was composed of the following parties: Liberals, 118; Conservatives, 91; Liberal-Progressives, 11; United Farmers of Alberta, 11; Progressives, 9; Labor, 3; and Independent, 2. The cabinet as formed on Sept. 25, 1926, is as follows: Prime Minister, Secretary of State for External Affairs, William Lyon Mackenzie King; Finance and Receiver General, James A. Robb; National Defense, Col. J. L. Ralston; Postmaster General, Peter J. Veniot; Soldiers' Civil Reestablishment and Public Health, James H. King; Justice and Attorney-General, Ernest Lapointe; National Revenue, W. D. Euler; Marine and Fisheries, Pierre J. A. Cardin; Secretary of State, Fernand Rinfret; Railways and Canals, Charles A. Dunning; Interior, Indian Affairs, and Mines, Charles Stewart; Agriculture, William R. Motherwell; Public Works, John C. Elliott; Trade and Commerce, James Malcolm; Solicitor General, Lucien Cannon; Immigration and Colonization, Robert Forke; Labor, Peter Heenan; Minister without Portfolio, Senator Raoul Dandurand.

HISTORY. The meeting of the Canadian Parliament in the spring spent considerable time discussing the budget (see above under *Finance*) and the status of the Dominion under the results of the Imperial Conference of 1926. (See *YEAR BOOK* for that year.) It became increasingly plain that both parties in Canada expected the Government to assert its independence and freedom from any kind of control at London to a greater degree as time went on. Along these lines may be mentioned the appointment of Dominion diplomatic agents to Japan and Paris. These representatives were virtually full-fledged ambassadors and were capable of carrying on negotiations with these countries to the same extent that the representative in Washington does for the Dominion Government. It was also proposed during the year to have a diplomatic representative of Great Britain appointed to

serve at Ottawa, inasmuch as the Governor-General of Canada was merely the personal representative of the British King.

One of the problems that the new representative in Japan would have to deal with almost immediately was the question of Oriental immigration on the west coast, particularly in British Columbia. This province was passing through all the stages that have fallen to the lot of the Californians in recent years. The Japanese and Chinese laborers with their lower standards of living were flocking to the Canadian shores and seriously interrupting the economic progress of the Canadian people. British Columbia was helpless to deal with the matter, inasmuch as they had no direct share in foreign affairs and the question of immigration was subject to treaty relations. The province demanded that immigration be reduced to the lowest possible point and that those immigrants of the Far East who were already in British Columbia should be sent back. British Columbia was also desirous of passing alien land laws and education laws similar to those which caused so much friction between Japan and the United States a few years ago. Japan, of course, stood on her treaty rights and stated again and again that she had nothing to do with British Columbia but could only deal with Canada as a unit.

Relations between the United States and Canada remained very cordial during the year. The Royal Commission on Customs and Excise brought in its report in the early part of the year and stated that there was a tremendous amount of illegal smuggling going on between Canada and the United States, particularly in liquor. The Commission made several recommendations to stop this practice, among which might be mentioned the abolition of the right of private firms to ship liquor, the reduction of the penalty for smuggling in order to get more convictions, the increase of the number and standards of the border patrol, and the seizure of vessels believed to be engaged in this trade. It was planned to hold a joint conference on the subject early in 1929.

CANADA, THE UNITED CHURCH OF. Under this designation a single body was formed in 1925 by the union of the Congregational Churches, the Methodist Church, and the Presbyterian Church in Canada. The Methodist Churches of Newfoundland and Bermuda are also included in the union. Following upon the formal consummation of the union, June 10, 1925, a total of 400 congregations, mostly in smaller towns and rural districts, amalgamated into approximately one-half that number of self-supporting charges, the number of these local consolidations within the Conferences being as follows: British Columbia, 45; Alberta, 23; Saskatchewan, 38; Manitoba, 22; London, 36; Hamilton, 30; Toronto, 60; Bay of Quinte, 24; Montreal and Ottawa, 45; Maritime Conference, 87; Newfoundland, none. After union came into effect, 285 new fields of home-mission status were opened under the Board of Home Missions, each of these 285 fields including between three and four places at which public worship was inaugurated and regularly conducted. It followed that nearly 1000 communities were served in 1928, in areas previously unoccupied by any Church. In the same period 375 fields which were formerly aid-receiving became self-support-

ing and passed off the home-mission list. There were 1571 fields on the home-mission list at the end of the year, and 4368 preaching places in these pastoral charges.

At three successive General Councils, held in 1925, 1926, and 1928, the permanent organization of the Church went forward. The third General Council, held at Winnipeg, Manitoba, in September, 1928, took action looking to a strong evangelistic movement in the period leading up to the nineteenth centenary of Pentecost in 1930. It was decided to hold the fourth General Council in London, Ont., in 1930. General statistics for the year ending Dec. 31, 1927, showed the following returns: Conferences, 11; Presbyteries, 115; communicants, 637,750, an increase of 37,228 since Mar. 31, 1926; number of families under pastoral care, 395,724; number of persons under pastoral care, 1,418,351; members of Sunday schools, 619,570, about 300 new Sunday schools having been formed during the year 1927. The Moderator of the General Council for 1928-30, was the Right Rev. William T. Gunn, D.M.A., D.D., and the secretary, the Rev. T. Albert Moore, D.D., 421 Wesley Buildings, Toronto 2, Ont.

CANALS. While ship canals show their great economic value, and the completion of the Welland Ship Canal in Canada, under construction in 1928, was awaited with great interest, the inland canal system in America appears, in spite of recent agitation for increased expenditure, to have reached its culmination many years ago. By 1928 over three quarters of the American inland canal system had been abandoned and the only great recent experiment, the New York State Barge Canal, continued to be a seven-million-dollar annual burden to the taxpayers of this State and carried less than 10 per cent of the designed traffic. In Europe conditions as regards speed in transportation and low labor costs for loading, unloading, and transshipping, still encouraged canal construction.

INLAND ATLANTIC WATERWAY. During the year some work was done on this system which ultimately would make it possible for small vessels to go from Boston to Virginia by an inland route.

THE CAPE COD CANAL. Built by private interests in 1914, and connecting Buzzards and Massachusetts bays, this canal was purchased by the Government during the year for about \$12,000,000 and was to become a toll-free part of the Atlantic inland waterway. Another link was the *Chesapeake and Delaware Canal*, a historic work, taken over by the Government in 1919.

OHIO RIVER CANALIZATION. The United States Government engineers continued the works for the improvement of the Ohio destined to provide a 9-foot depth for its entire length of 968 miles. Two fixed, and forty-eight movable, dams were required and locks generally 110 x 600 feet in size were being built. From the technical viewpoint it is an interesting piece of work, but it remained to be seen whether an expenditure of over 100 million dollars for this purpose would be justified by the traffic developed.

GERMAN CANALS. Details are lacking, but it was reported that three important works were under way in Germany. Indeed the Rhine-Danube Canal was practically finished and had been opened in large part to traffic for some time. The so-called Midland Canal joining the Rhenanian-Westfalian industrial district with central

Germany was expected to be completely in service by 1930. The Hanskanal from the Rhur to Hamburg, on the other hand, while under construction, would take some eight years to complete.

THE MURRAY RIVER WORKS, AUSTRALIA. Rapid progress was being made on these great navigation and irrigation works in the southeast corner of Australia. The Murray River, with its principal branch, the Darling, empties into the sea near Adelaide in South Australia, and this State had long been interested in improving it for navigation. On the other hand, New South Wales and Victoria, in whose territory it rises, were interested primarily in irrigation development. South Australia began works in 1911, after ineffective attempts to secure coöperation with its sister States. The Act of 1915, however, brought about an effective scheme for concerted action between the Commonwealth of Australia and the three States and work since had gone forward on a project which had been changed more or less from time to time but which involved an expenditure of some 35 or 40 million dollars. The most important works were the two dams forming storage reservoirs at Lake Victoria on the lower and at Mitta Mitta on the upper Murray, a stream which is in some years navigable at all times for as much as 1100 miles from its mouth while in other years it dries up in part and may be navigable for only one month.

The scheme involves some 900 miles of the Murray, the costs being met in part by the Commonwealth and by the construction of separate works by the State most vitally interested. The lowest lock and weir at Blanchetown were put in service in 1922, no regulating works being required in the 170 miles below this point. Between Blanchetown and Lake Victoria six other similar works were necessary which would also facilitate the irrigation of several thousand acres. Several other weirs and locks follow, and in the Kerang district, north of Melbourne, where some 85,000 acres of land have been under irrigation by the use of two depressions, Kerang Lake and Kow swamp, flow is insured by means of the Torrumbarry Weir and Lock completed in 1923. The greatest single work is the Mitta Mitta Dam at the junction of this river with the Murray. This dam, an earth structure with concrete core wall and a concrete sluice and spillway and of a total length of 5300 feet, will submerge some 69 square miles and will store two million acre feet of water. It was under construction in 1928.

WELLAND CANAL. Probably the most important canal work in the new world in progress and nearing completion in 1928, was the Welland Ship Canal which would join lakes Erie and Ontario. Although this work was started in 1913, construction was held up due to the World War, but was resumed later and the contract for the last section was let in 1925. It was expected that the work would be completed in 1930. Seven locks, among the largest in the world, were to replace the numerous small locks of the existing canal. An unfortunate accident in August, 1928, wrecked one of the huge canal gates—a mitering leaf 82½ feet high was overturned by a falling crane—but the Canadian Government was carrying the work forward as rapidly as possible.

This canal was designed to permit lake ship-

ping to reach ports on Lake Ontario and doubtless would have an important effect on traffic routes between the Great Lakes and the Atlantic Seaboard. There are, of course, two possibilities. Either the St. Lawrence or the Great Lakes-Hudson ship canal may be built, or ports may be established on Lake Ontario, superseding to a considerable extent the Lake Erie ports, for transshipment from lake steamers to railroads. The St. Lawrence project was still tied up in international complications and the Great Lakes-Hudson Canal, because of physical and operating difficulties as well as the New York Barge Canal failure, also seemed rather remote. The Canadian Government had, therefore, already selected Prescott, Ontario, a town well along the St. Lawrence below the eastern end of Lake Ontario, as a site for a new port. On the American side no official action was, of course, possible, but Oswego would naturally hope to profit by such extension of the Great Lakes steamship lines into Lake Ontario as may occur.

CHICAGO DRAINAGE AND ILLINOIS CANALS. Although the Chicago Drainage Canal was built primarily to enable Chicago to discharge her drainage into the upper Mississippi Valley instead of Lake Michigan, her source of water supply, it will become in the near future a connecting link in a waterway from the Great Lakes to the Mississippi. This will be made possible through the construction of a connecting Illinois waterway, 63 miles long from the Drainage Canal at Lockport to the Illinois River at Starved Rock. It was expected that the work would be completed by 1930. The canal was to be 200 feet wide with 9 feet depth of water and will require five locks 110 x 600 feet. Provision also was made by Congress for a 9-foot depth in the Illinois River from Starved Rock to the Mississippi.

In the meantime the whole Chicago Drainage and water supply problem was under discussion. Inasmuch as the apportionment of Great Lakes water between the United States and Canada at Niagara Falls—36,000 sec. ft. (cubic feet per second) to Canada and 20,000 sec. ft. to United States—was assumed to have been based on an allowance for the Chicago and other American diversions including the New York Barge Canal, and because of its effect on navigation in the Great Lakes, the diversion by Chicago was vigorously attacked by other States and became a major economic and water-rights problem. New York was interested in the hope of increased power opportunities at Niagara. The Great Lakes cities also were interested due to the lowering of the lake level and because of the precedent set by the Chicago diversion. A report by a board of review, consisting of over 25 well-known engineers, in 1925, while apparently intended to set the seal of engineering approval on the Chicago diversion, was generally accepted as being merely a technical statement of Chicago's interests in the matter. In the same year the United States War Department increased the allowance for diversion from 4167 sec. ft. which had been authorized at the opening of the Chicago Drainage Canal in 1900, to 8500 sec. ft. not inclusive of the diversion for water supply, which averaged 1200 to 1500 sec. ft., making a total of about 10,000 sec. ft. The permit was for five years and set forth certain conditions to be observed, one of which relating to the reduction of waste through metering has certainly not been met.

Following the granting of this permit, action was brought before the Supreme Court by thirteen States affected by the diversion and questioning the legal rights of Chicago therein. Charles E. Hughes was appointed special master to report on the subject which he did late in 1927, but no action has been taken by the Supreme Court, up to the end of 1928. Briefly, Judge Hughes recommended that the complaint of the thirteen States be dismissed and stated that in his opinion the War Department had authority under Congress to grant such permits, to impose reasonable conditions and to judge whether they had been complied with. If this was accepted by the Supreme Court, the case doubtless would go to Congress. The proposed Delaware development for New York's water supply, involving an interstate source, was also being held up pending the outcome of the Chicago controversy. See *Journal American Water Works Association*, vol. xix (1928).

See also PANAMA CANAL; SAULT STE. MARIE, CANALS AT; SUZ CANAL.

CANARY ISLANDS. A group of small islands off the northwest coast of Africa, belonging to Spain. Area, 2810 square miles; population, Jan. 1, 1927, estimated at 503,151. The capital is Santa Cruz de Teneriffe, with an estimated population in 1927 of 52,757. The next largest city is Las Palmas, with a population of 67,122 in 1920. The University of Seville maintains an educational establishment in the Canaries and is in charge of higher education. There is regular steamship communication with Spain. The islands are under the administration of continental Spain through a local governor.

CANBERRA. The new Federal capital of Australia. (See AUSTRALIA.)

CANCER. ECONOMIC LOSS THROUGH CANCER. According to statistics compiled by Dr. Dublin of the Metropolitan Life Insurance Co., cancer costs on an average \$1000 for medicine and nursing alone. If we multiply this figure by 110,000, the number of cancer deaths in the United States yields an annual cancer bill of \$110,000,000. But if the economic value of the victims is computed on a basis of earning capacity, which of course varies with the various age groups, the cancer losses amount to more than \$580,000,000 annually which when added to the cost of the disease brings the total up to \$800,000,000. If this great loss were due to the forces of nature, as shown in inundations, hurricanes, earthquakes, etc., expert engineers would be asked to concentrate all of their energies on the problem. But if human life alone is at stake without any property considerations there is much less of care and anxiety. If all of the potentially valid agencies could be mobilized and coordinated, there might be some hope of bringing cancer under control, as has happened in the case of other social maladies.

IS CANCER A DISEASE OF THE ELDERLY? Blumenthal, the director of the Berlin Institute for Cancer Research, asks this question in the *Archiv f. Verdauungskrankheiten*, vol. 43, p. 82. Cancer is regarded as a disease of metabolism and all metabolic affections are most prevalent in middle and advanced years. After 70 there is no further tendency to increase, but in many statistics to decrease; which is readily explained by the general increase of the death rate. With increasing years there is a decline in the resistance to all disease, so that where there has

been a cancer menace in the shape of local irritation and disease, this menace is increased. Nevertheless it is not strictly correct to state that old age per se is a predisposition. We know further that a long period of incubation often amounting to many years lies between the first application of the causes and the final results. This incubation period undoubtedly varies with the kind of cancer, the locality and the exciting cause, but the reason why most young folk escape cancer may be linked up with the extremely long incubation period.

ALKALINE THEORY OF CANCER. While the condition known as acidosis is responsible for much disease, it seems favorable to a few ailments, as epilepsy and cancer. It appears that, in an address by Dr. E. McDonald, of the University of Pennsylvania Cancer Institute, delivered before the American Chemical Society Institute, the speaker accused alkalinity as the decisive factor in causing cancer. Whatever facilitates lowered acidity acts as a contributory cause and whatever raises it should act beneficially. Subjects with acidosis he found were immune. Irradiation acts favorably because it reduces alkalinity. The author was by no means the first to bring out this theory for the entire trend of modern chemical research has long pointed in this direction. Practical application of this principle will not be a simple matter for if inorganic acids would arrest the growth of cancer so simple a matter would have come to light long ago. It will be necessary to go deeper and find out the causes of the increased alkalinity and how to promote acidity. Diet may play a rôle here and certain drugs like calcium salts can be used to keep down alkalinity. But there may be an effort on the part of the tissues themselves to fight acidosis, which well appears from the fact that mineral acidosis produced by ammonium chloride has arrested cancer growth for a short time, but the system soon developed tolerance to the drug.

CANE SUGAR. See **SUGAR**.

CAPE COLONY. See **CAPE OF GOOD HOPE PROVINCE**.

CAPE OF GOOD HOPE PROVINCE. One of the four original provinces of the Union of South Africa; the southernmost province of the Union; formerly known as Cape Colony or the Colony of the Cape of Good Hope. Area, 276,536 square miles; population at the census of 1921, 2,781,542, of whom only 650,327 were European. The population at the census of 1911 was 2,564,965. The chief towns with their white population in 1921 were: Cape Town, 113,302; Kimberley, 18,288; Port Elizabeth, 25,982; East London, 20,374. The movement of population in 1926 so far as registered, was: Births, 57,468; deaths, 33,167; marriages, 15,026. In 1927 there were 112 local school districts. In 1926 there were 4585 aided schools with 137,843 European pupils, 176,955 non-European pupils, and 11,236 teachers. The trade between the province and the United Kingdom in 1927 was: Imports into the United Kingdom from the province, £15,082,404; exports from the United Kingdom into the province, £14,239,807. The chief exports to the United Kingdom were wool, mohair, hides and skins, corn, and feathers; the chief imports from the United Kingdom were cotton and woollen goods, machinery, iron and steel goods, and paper. The administrator of the province in 1928 was A. P. J. Fourie. See **SOUTH AFRICA, UNION OF**.

CAPET, LUCIEN. A distinguished French violinist, died in his birthplace, Paris, December 19. He was born Jan. 8, 1873, and after graduating, as winner of the first prize, from the violin class of J. Maurin at the Conservatoire in 1893, he organized a string quartet with Giron, Henri Casadesus, and Furet. This he disbanded in 1899, when he accepted a position as professor at the Conservatory of Bordeaux. Returning to Paris in 1903, he formed another quartet with Tourret, Henri Casadesus, and Louis Hasselmans, which soon won a European reputation, especially for its interpretation of Beethoven's quartets. In 1910 Tourret and Hasselmans resigned and were replaced by Maurice Hewitt and Marcel Casadesus and with these artists the organization continued its triumphant tours until the outbreak of the War. In 1919 Capet once more reorganized his quartet with Maurice Hewitt, Henri Benoit, and Charles Delobelle.

CAPE VERDE (vûrd) ISLANDS. A group of 14 islands off the western coast of Africa belonging to Portugal. Area, 1475 square miles; population at the census of 1926, 131,147, of whom 59,031 were males. The chief products are coffee, medicinal substances, hides, and millet. A small military force is maintained on the islands. The estimated public revenue in 1926-27 was 17,504,815 escudos and the expenditure, 17,111,690 escudos. Imports in 1926 amounted to 46,588,361 escudos and exports, 2,820,158 escudos. The chief port is Bissau. The administration is in the hands of a governor whose seat is at Praia, the capital.

CAPPER-KETCHAM ACT. See **AGRICULTURAL EXTENSION WORK; AGRICULTURAL LEGISLATION**.

CARBOLLOY. See **PHYSICS**.

CARDOZO, JUDGE BENJAMIN N. See **CRIME**.

CARINTHIA. A province of the Republic of Austria; formerly a crownland of the Austro-Hungarian Empire. Area, 3680 square miles; population at the census of 1923, 370,748, as compared with 396,200 in 1910. Carinthia, in 1923, had 5.67 per cent of the total population of Austria. Capital, Klagenfurt, with a population in 1923 of 27,423.

CARNEGIE CORPORATION OF NEW YORK. Founded by Andrew Carnegie, and chartered under the laws of the State of New York, June 9, 1911, this corporation was formed for the purpose of promoting "the advancement and diffusion of knowledge and understanding among the people of the United States." The original endowment was \$125,000,000, an amount to be increased upon the final settlement of Mr. Carnegie's estate. The income of this principal fund is applicable only within the territorial limits of the United States, but the Corporation holds also a special fund of \$10,000,000, of which the income is applicable in "Canada and the British colonies." The programme of the Corporation in 1928 was concerned chiefly with library service, the place of the arts in American life, adult education, scientific research, and educational studies. Although the Carnegie Corporation is an educational foundation, it is not an operating agency, and its activities are limited to financial coöperation with existing institutions and associations.

In 1928, as in the previous year, approximately two-thirds of the annual income of the

Corporation was devoted to a reduction of unpaid obligations, which on Sept. 1, 1928, amounted to \$21,616,662. The annual report of Pres. Frederick P. Keppel shows that during the fiscal year 1927-28, the sum of \$2,041,250 was appropriated toward (a) library service, \$140,000; (b) the encouragement of adult education activities, \$102,000; (c) the support of national organizations in the field of fine arts and of departments of arts in colleges and universities and of projects for developing appreciation of arts and music, \$487,500; (d) the support of educational and scientific studies, research, publications, \$645,750; (e) general interests, including Carnegie Endowment for International Peace, Institute of International Education, \$660,000.

From the income of its \$10,000,000 fund, the Corporation embarked upon a five-year programme in British Africa, involving a total of \$500,000. Scientific research, aid to Jeanes Schools exchange of educational visits, arts aid, library service were included in the programme which was carried on largely through responsible local bodies. The Corporation continued its policy of making scholarship grants to graduate students who proposed to become college teachers of art. It continued to support various important projects, such as research in purification of insulin, investigation of high-frequency rays of cosmic origin, coöperative research in pyorrhea and osteosclerosis, and study of the susceptibility to infectious diseases. Various studies conducted by the Society for the Promotion of Engineering Education, the Modern Language Association, the Institute of Economics, and the American Law Institute were continued through the year.

The Trustees of the Corporation in 1928 were: James Bertram, Nicholas Murray Butler, Louise M. Carnegie, John J. Carty, Samuel Harden Church, Robert A. Franks, William J. Holland, Henry James, Frederick P. Keppel, Russell C. Leffingwell, John C. Merriam, John A. Poynton, Henry S. Pritchett, and Elihu Root. Officers of administration were: Elihu Root, chairman of the board; Robert A. Franks, vice chairman and treasurer; Frederick P. Keppel, president; James Bertram, secretary; and Robert M. Lester, assistant to the president. The headquarters are located at 522 Fifth Avenue, New York. See **UNIVERSITIES AND COLLEGES.**

CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING, THE. A foundation established by Andrew Carnegie on April 16, 1905, when he placed an endowment of \$10,000,000 in the hands of 25 trustees, mostly presidents of universities and colleges, for the purpose of encouraging higher education in the United States, Canada, and Newfoundland, chiefly by providing retiring allowances for teachers in universities and colleges and pensions for their widows. The Foundation was incorporated by Act of Congress in 1906. Its resources were increased by a further gift of \$5,000,000 from Mr. Carnegie in 1908, and by appropriations of \$1,250,000 in 1913 and \$12,000,000 in 1918 from the Carnegie Corporation, which Mr. Carnegie established in 1911. At the completion of its twenty-third year in 1928, the Foundation had endowments and accumulated reserves amounting to \$31,527,000, and had distributed \$17,372,000 in retiring allowances and pensions to 1000 teachers and 500 widows, chiefly through 72 as-

sociated institutions, selected because of their educational excellence. The Foundation publishes extensive annual reports, which deal with many educational problems. Its Division of Educational Enquiry, established in 1913, has issued a score of comprehensive bulletins, dealing with medical, legal, engineering, dental, and vocational education, the training of teachers, intercollegiate athletics, and kindred subjects. Dr. Henry Smith Pritchett is president and Clyde Furst, secretary. The headquarters are at 522 Fifth Avenue, New York. See **UNIVERSITIES AND COLLEGES.**

CARNEGIE INSTITUTE OF TECHNOLOGY. A non-sectarian institution for technical education at Schenley Park, Pittsburgh, Pa.; founded in 1900. The enrollment for the autumn of 1928 was 6039, including 2453 registered in the regular day courses, and 3586 in the evening courses. For the summer session 755 students were registered, and the faculty in 1928 numbered 355, of whom 265 were on full time, and 90 on part time. The endowment of the institution was \$15,900,000 and the annual income \$794,000 (not including student fees). The Institute has a campus branch of the Carnegie Library of Pittsburgh which has 450,000 volumes. President, Thomas Stockham Baker, Ph.D., LL.D.

CARNEGIE INSTITUTE, PITTSBURGH. See **ART EXHIBITIONS.**

CARNEGIE INSTITUTION OF WASHINGTON. An organization founded in 1902 to encourage broad and liberal investigation, research, and discovery, and the application of knowledge to the improvement of mankind. The results of its investigations are made known through the scientific journals, the Institution's *Year Book*, a series of monographs which it issues, and other regularly established channels. During the year the Executive Committee authorized the publication of 18 volumes, at an estimated cost of \$72,150, including: *The Year Book*; *History of Manufactures in the United States*, vol. ii, by Victor S. Clark; *Climatic Cycles and Tree-Growth*, vol. ii, by A. E. Douglass; *Geological Comparison of South America with South Africa*, Alexander L. Du Toit; and *Archaeological Investigations in Kamchatka*, by Waldemar Jochelson.

The Institution's programme of studies and related investigations in the field of Early American History benefited by Dr. Alfred V. Kidder's visits during the year to all localities where the researches of the Institution were under way. A part of the project concerning Middle American history involves the relation of questions touching origin and development of the Maya people to those problems which are connected with the history of the earliest civilizations of Central America, Mexico, and the southwestern regions of the United States. The study of Middle American civilization involves not only architecture and art, but also a careful examination of the development of this civilization in relation to its environment, and is to include studies of the general geology, ethnobotany, and ethnozoölogy of the region up to and including the story of the specific difficulties which have beset the human group in its medical history. The object of such a project is to relate the history of the Maya people to problems of the present day, so as to provide historical evidence which will contribute directly toward the interpretation of questions of the present and the future.

The year's activities in Middle American Archaeology brought large results in terms of scientific achievement. Improvements in the organization of excavation work at Chichen Itzá, in Yucatan, enabled the investigators to spend a large percentage of their time in the study of results attained and in the consideration of the scientific significance of the work under way. In connection with the Chichen project, an exceptional piece of excavation on the Warriors Temple was brought to completion under the direction of Earl Morris. The excavation and restoration of this great structure, which contains within itself the remains of several earlier buildings, have revealed an object of great beauty, and have afforded an opportunity for the independent study of each stage in the development of the series of buildings. At Uaxactun, the principal site of excavations in Guatemala, the difficult work of establishing a camp and laying out a plan for study, carried through by Oliver G. Ricketson in past years, made possible concentrated research in 1928, the results of which were unusually valuable.

The programme of the institution in the field of plain sciences was re-stated beginning with 1928 and many important activities in these subjects were coördinated in a Division of Plant Biology under the chairmanship of Dr. H. A. Spoehr, in order to better visualize the field and the opportunities for effective co-operation among the interests concerned. A lease for five acres of land was obtained on the campus of Stanford University and provision made for a new laboratory to serve as headquarters of the Division, and for the conduct of researches in photosynthesis, taxonomic and ecologic problems, and other subjects; the Desert Laboratory at Tucson, Arizona, in charge of Dr. Forrest Shreve, carried on researches relating to arid conditions on a "campus" of approximately 800 acres of interesting desert country; at the laboratories in Carmel, California, researches on the physiology of tree growth under the direction of Dr. D. T. MacDougal, Dr. J. B. Overton, of the University of Wisconsin, and Dr. Gilbert Smith, of Stanford University, resulted in significant contributions toward the interpretation of the structure and physiological processes of the tree, at a time when such investigations are of great importance in the field of forest research.

The ship, *Carnegie*, which sailed from Washington on May 1, on its seventh cruise, extended its work beyond observations on magnetic and electric variations to include correlated aspects of physical oceanography, and carried a larger equipment of apparatus and a more widely experienced staff than on previous cruises. Other phases of the observational programme of the Department of Terrestrial Magnetism included the maintenance of two permanent observation stations on approximately opposite sides of the earth—one high in the Andes at Huancayo, Peru; the other at Watheroo in Southwestern Australia, for the purpose of investigating the natural electric currents flowing in the earth, and their relation to the phenomena of the earth's magnetic changes.

During the year the institution lost a leader in research through the death of Theodore W. Richards, who for more than twenty-five years was research associate of the institution and who during that time was engaged in the most difficult problem of the study of atomic weights.

The institution also lost Dr. J. Franklin Jameson through his resignation to accept the chair of American history established in connection with the Library of Congress. Dr. Jameson had been head of the Department of Historical Research for 23 years, and under his direction 23 volumes had been published opening the way to sources of information on American history in the principal libraries and archives of America and Europe.

Total receipts of the Institution from interest on endowment, bonds, and banks deposits, sales of publications, refunds on grants, and miscellaneous items amounted to \$27,826.197 for the year, while total expenditures, including purchase of bonds, large projects, minor grants, publications, and administration amounted to \$27,667.312. The president in 1928 was Dr. John G. Merriam; the executive committee included Elihu Root, chairman, John J. Carty, W. Cameron Forbes, John G. Merriam, Wm. Barclay Parsons, Stewart Paton, Henry S. Pritchett, and George W. Wickersham, and W. M. Gilbert was administrative secretary of the institution.

CAROLINE ISLANDS. See GERMAN NEW GUINEA.

CARRANZA, EMILIO. Mexican aviator, died July 12, in an accident near Mount Holly, N. J., while attempting a non-stop flight from Roosevelt Field, Long Island, N. Y., to Mexico City. He was born at Ramos Arizpe, Mex., in December, 1905. Shortly before his death he had won high praise and had aroused enthusiasm in Mexico and the United States by a "good-will" flight from Mexico City to Washington, D. C., undertaken as a non-stop flight, but interrupted by a forced descent in North Carolina due to fog and engine trouble. Before that attempt he had made a non-stop flight from Rockwell Field, San Diego, Calif., to Mexico City, 1575 miles in 18 hours and 40 minutes. This had won for him the title, "the Lindbergh of Mexico," and he was the most popular aviator of Mexico. He was one of the delegation of Mexican flyers which greeted Lindbergh on his arrival in Mexico in December, 1927, and the two aviators were friends. The flight to Washington was made in acknowledgment of Lindbergh's visit to Mexico by air. Carranza was a grandnephew of Venustiano Carranza, who was President of Mexico, and he held the rank of captain in the Mexican Army. He had served the government in the air during warfare against insurgents and Yaqui Indians. His death caused intense grief among the Mexican people, who were very fond of the young aviator and proud of his exploits, and there was a national funeral, with highest honors. Previously, high honors had been accorded to his body by the United States, on its removal to Mexico.

CARTON, RICHARD CLAUDE (R. D. CRITCHETT). English actor and dramatist, died at London, April 1. He was born in 1853. For a time he was on the stage at Bristol and at London, before collaborating with Cecil Raleigh on *The Great Pink Pearl* (1885), *The Pointsman* (1887), and *The Treasure* (1888). His sentimental manner in his own plays was exhibited in *Sunlight and Shadow* (1890) and in *Liberty Hall* (1892; revived at New York, 1913). His later light comedies, which were sometimes criticized for artificiality of diction, included: *The Home Secretary*; *The Tree of Knowledge*; *Lord and Lady Algy*; *The Ninth Waltz*; *A Clean State*; *The*

Rich Mrs. Repton; Lorrimer Sabiston, Dramatist; The Bear Leaders; A Busy Day; The Off-Chance; Other People's Worries; One Too Many. Among the numerous well-known players who appeared in Carton's comedies were Lewis Waller, Julia Neilson, Charles Hawtrej, Sir George Alexander, Marion Terry, William Faversham, and Weedon Grossmith. Katherine Compton, actress, the wife of the playwright, who also appeared in his plays, died May 16, 1928.

CARTWRIGHT. SIR FATEFAX LEIGHTON. British diplomat, died at London, January 9. He was born July 20, 1857. After studying at Clifton College and taking his degree at Clare College, Cambridge, he entered the British diplomatic service in 1881 as an attaché. He rose in the service, being stationed at various cities in Europe and Asia and at Mexico City, until, in 1906, he became minister resident at Munich, Bavaria. He remained there until 1908, when he was promoted to the post of ambassador to Austria-Hungary. His service at Vienna was marked by his indefatigable efforts to bring about a peaceable solution of the Bosnia-Herzegovina crisis, but he incurred thereby the ill will of the German Emperor, William II, who later indicated his unwillingness to accept Cartwright as ambassador to Germany. In 1913 failing eyesight compelled his withdrawal from public service. He was made a member of the Victorian Order in 1903, a Knight Commander of the Order of St. Michael and St. George in 1908 (receiving the Grand Cross of the same order in 1914), and he received the Grand Cross of the Victorian Order also in 1909. While in Teheran, Persia, he wrote *The Mystic Rose From the Garden of the King*, a translation of Persian poems and stories; the book was published in 1925.

CARUSON, GUGLIELMO. An Italian dramatic baritone, died in Chicago, January 9. He was born in Naples, Nov. 21, 1862, and trained in Rome by Persichini and Cotogni. He made his début in Piacenza, in 1886, as Valentine in *Faust*, and rapidly won a great reputation in Italy, Australia, and South America. He was equally famous as an oratorio singer and is especially associated with the premières of Perosi's works. At the height of his powers, he retired in 1900 and devoted himself to teaching. From 1905 until his death he resided in Chicago.

CASE SCHOOL OF APPLIED SCIENCE. An engineering college at Cleveland, Ohio; founded in 1881. In the autumn of 1928, the enrollment was 642 students. The faculty numbered 69. The summer session registration was 150. The productive funds of the college amounted to \$4,040,315, and the income for the year to \$357,109. The library contained 24,485 volumes. The Worcester Reed Warner Hydraulics and Mechanics laboratory was completed during the year at a cost of \$155,811. President, Charles Sumner Howe, Ph.D., LL.D., D.Sc.

CASUALTY INSURANCE. See INSURANCE.

CATHEDRAL. See ARCHITECTURE.

CATHOLIC CHURCH. See ROMAN CATHOLIC CHURCH.

CATHOLIC UNIVERSITY OF AMERICA. An institution of higher education at Washington, D. C.; founded in 1887. It includes graduate schools of sciences, law, and philosophy. Affiliated with it are the Catholic Sisters College for the training of teachers, Trinity College for young women, and the houses of study

of 20 religious orders. The enrollment for the autumn of 1928 was 893, distributed as follows: School of theology, 102; school of canon law, 35; school of law, 20; school of philosophy, 395; school of letters, 88; and school of sciences, 252. In the 1928 summer session there was a registration of 742. The faculty numbered 113, of whom 35 had the rank of professor, four promotions having been made from the rank of associate professor during the year. The productive funds amounted to \$2,648,778, and the income for the year to \$748,871. Among the important gifts were an additional \$100,000 from John K. Mullen of Denver, toward the erection of the John K. Mullen Memorial Library, which was under construction; and an additional \$21,000 from the Hierarchy of the United States for the erection of a home for ecclesiastical professors. The library contained 273,000 volumes. Rector, the Rt. Rev. Monsignor James H. Ryan, Ph.D., S.T.D.

CATTLE. See LIVESTOCK; VETERINARY MEDICINE.

CATTLE TICK ERADICATION. See LIVESTOCK; VETERINARY MEDICINE.

CAUCASUS, kû'kâ-sûs. A term applied to the indefinite region in southeastern Europe, comprising the isthmus which separates the Sea of Azov and the Black Sea from the Caspian Sea; formerly a government of the Russian Empire. It was divided into two districts of Trans-Caucasia and Cis-Caucasia, of which the former was divided among the three republics of Armenia, Georgia, and Azerbaijan. These afterwards separated and were respectively incorporated under the constitution of 1923, in the Union of Soviet Republics, and are now known as the Transcaucasian Federation of Soviet Republics. Consult each under its own title.

CAVALRY. See MILITARY PROGRESS.

CAVE, VISCOUNT (GEORGE CAVE). British jurist, died at Burnham-on-Sea, England, March 29. He was born at London, Feb. 23, 1856, and was educated at the Merchant Tailors' School and St. John's College, Oxford. He was called to the bar in 1880 and became a king's counsel in 1904. He acquired a large practice at the chancery bar. From 1913 to 1915 he was standing counsel for Oxford University, and from 1914 to 1915 he was attorney-general to the Prince of Wales. From 1906 until he was created a peer he represented the Kingston division of Surrey in the House of Commons. There he achieved a high reputation as an authority on such subjects as licensing, local government, and land taxation. He was solicitor general, 1915-16; home secretary, 1916-19; a lord of appeal, 1919-22, and from 1922 until immediately before his death, except for the time when the Labor government was in power, lord chancellor. He was knighted in 1915, and created first Viscount Cave in 1918. He was made a member of the Privy Council in 1915. Lord Cave resigned the lord chancellorship the day before his demise, and at the same time his advancement to an earldom was announced. For a short time, in 1927, Lord Cave was acting prime minister of Great Britain, in the absence of Premier Baldwin and Sir Austen Chamberlain, secretary of state for foreign affairs.

CELEBRATIONS. The sesquicentennial anniversaries of the great events of the War of the Revolution, as well as anniversaries of other important events continued to be celebrated dur-

ing the year. The more important of these are mentioned:

February 4. The one hundred fiftieth anniversary of the signing of the treaty of alliance with France was celebrated on Bedloe's Island, New York City, under the auspices of the Boy Scout Foundation of Greater New York assisted by representatives of various patriotic organizations. Addresses were made by Maxim Mongendre, W. Francklyn Paris, and J. Henry Smythe.

March 13-23. During this period elaborate festivities were conducted in Oslo, Norway, in commemoration of the hundredth anniversary of the birth of Henrik Ibsen, the famous dramatist. Addresses were made by specialists on his works, gala performances of his plays were presented, and other interesting entertainments were provided for the nearly one hundred official guests from 19 countries. The chief American delegates were Robert U. Johnson and O. E. Roelvaag.

March 18. The one hundred fiftieth anniversary of the British ambuscade of Colonists at Quinton occurred on March 18, and on March 20 the British massacre at Hancock's Bridge took place. These were two of the bloodiest skirmishes of the War of the Revolution in southern New Jersey. Public celebration of these anniversaries took place on May 19. A programme was arranged by the Salem County Historical Society and the Salem Chapter of the Daughters of the American Revolution, comprising addresses by Governor Moore and Attorney-General Katzenbach of New Jersey, and pilgrimages were made to the battlefields, where markers were placed at various spots by the representatives of the patriotic societies.

April 13. In response to an appeal by the Jefferson Centennial Commission of the United States, the patriotic societies throughout the country observed with appropriate exercises on April 13 the 185th anniversary of the birth of Thomas Jefferson, author of the Declaration of Independence and third President of the United States.

April 17-23, was celebrated as Centennial week for Columbus, Ga., which was incorporated in 1828 during the Administration of Gov. John Forsythe. It was also Centennial Week for the *Enquirer-Sun*, which was founded by Mirabeau B. Lamar, who left Georgia and was elected vice president and then President of the Republic of Texas. Preparations for this centennial brought to light many interesting facts, personal and historic. The links of it extended from Harvard University into New York, then to Baltimore, through Georgia and on to Texas.

May 5. One hundred and fifty years of friendship between France and the United States was observed at Valley Forge with a pageant and with addresses by Gen. Charles P. Summerall, Chief Justice Robert von Moschzisker of Pennsylvania, and others describing the growth of the two nations' amity and predicting a continuance of friendly feeling. In addition to the pageant there was presented Joseph Addison's tragedy *Cato* which was enacted before General Washington and a distinguished audience in May, 1778, by officers of the Continental Army. The programme was arranged by the Valley Forge Park Commission, the Pennsylvania Historical Society, the Pennsylvania Federation of Historical Societies, and the Huguenot Society of Pennsylvania.

May 20. A solemn mass commemorating the sesquicentennial of the mass celebrated aboard the flagship, *Languedoc*, one of the French fleet on its way to bring the aid of France to the American Revolutionists, was celebrated by Cardinal Dougherty in the Cathedral of Saints Peter and Paul in Philadelphia, Pa.

June 2. The centenary of the beginning of the Chesapeake and Ohio Canal on the banks of the Potomac River near Washington, D. C., was celebrated with a historic pageant, and on

June 4, a bronze tablet was unveiled on which was the inscription: "Lockkeeper's house, formerly the eastern terminal of the Chesapeake and Ohio Canal, erected about 1835. The canal passed along the present line of B Street in front of the house, emptying into Tiber Creek and the Potomac River."

June 28. The one hundred fiftieth anniversary of the battle of Monmouth was celebrated in Freehold, N. J., with a military parade, various civic ceremonies, and terminating with a pageant depicting the battle and the famous incident of Molly Pitcher serving her husband's gun.

June 29-July 3. The sesquicentennial anniversary of the battle of Wyoming was celebrated in Wilkesbarre, Pa., by a historic pageant in which 6000 persons reenacted that event. An entire village of Miami Indians was moved from Wabash, Ind., to Wilkesbarre in order to participate in the pageant.

July 1-4. The anniversary of the signing of the Declaration of Independence brought to a close in Wilkesbarre, Pa., the three-day celebration of the sesquicentennial of the Wyoming Valley massacre, which took place on July 3, 1778. Fifty bands and more than 150 floats depicting Wyoming Valley history and tradition, were in the procession. The exercises were concluded with a presentation of the "Pageant of Wyoming Valley," in which more than 6000 persons participated.

August 15-19. The sesquicentennial anniversary of the discovery by Capt. James Cook of the Hawaiian Islands was elaborately celebrated. The programme included events held on three of the islands, with native pageants and ceremonies depicting the landing of Captain Cook and his reception by the natives at Waimea, Island of Kauai, in 1778. On the Island of Hawaii, at Kealahakua Bay, a tablet marking the spot where the discoverer was killed was dedicated. Native feasts, pageants, and receptions were held in Honolulu and the anniversary programme provided excursions to Kilauea Volcano and other points of historic and scenic interest in Hawaii. Included also in the programme were a series of addresses by eminent scholars and authorities on political, diplomatic, commercial, geographical, and maritime sciences showing the results of the discovery, which later will be published. A souvenir half-dollar with an issue of 10,000 copies was authorized by Congress, and the Post Office Department placed on sale a special issue of the 2-cent and 5-cent stamps of the current issue, surcharged "Hawaii 1778-1928" in black ink. The United States was officially represented at the celebration by Secretary of War Davis.

August 16. The twenty-fifth anniversary of the first success of the Wright Brothers was celebrated by 400 planes of the combined air squadrons of the army, navy, and marine corps which

presented a mammoth display of the United States air forces in aid of the dedication of San Diego's (Calif.) new airport.

August 29. The one hundred fiftieth anniversary of the battle of Rhode Island was celebrated in Newport, R. I., with early morning exercises at the revolutionary earthworks known as Fort Barton in Tiverton. The celebration continued throughout the day, passing at noon to Butts Hill in Portsmouth, then to Newport where a military parade took place and ended on Newport Beach, where a banquet was held.

September 10-15. The centenary anniversary of the birth of Leo Tolstoy was celebrated in Moscow, Russia, and elsewhere with memorial meetings, concerts of his favorite pieces, performances of his plays, and special exhibits at his home and in museums. Representatives of various organizations, including the Academy of Arts, the Academy of Sciences, the Union of Literary Societies, all theatres, conservatories, and the Society of Former Political Prisoners, participated in the Moscow celebration.

September 12. The one hundred seventy-third anniversary of the birth of Chief Justice John Marshall was celebrated in Fort Royal, Va., under auspices of the Shenandoah National Park Highway Association. Judge John Barton Payne presided. Representative R. Walton Moore, William E. Carson, chairman of the Virginia State Conservation and Development Commission, Judge Frank S. Tavenor of Shenandoah, and others made addresses.

September 12. The one hundred fourteenth anniversary of the bombardment of Fort McHenry and the writing of "The Star-Spangled Banner" was celebrated in Baltimore, Md., by the dedication of the restored fort as a National shrine with patriotic exercises, including a parade and addresses by Governor Ritchie of Maryland and F. Trubee Davison, the Assistant Secretary of War.

September 16. The one hundred forty-first anniversary of the adoption of the Constitution was celebrated on the steps of the Sub-Treasury building in New York City, under the auspices of the New York Chapter of the Sons of the American Revolution. Brig. Gen. Louis W. Stotesbury delivered the address of the day on "The Constitution." A commemorative wreath was placed on the statue of President Washington by Louis Annin Ames, Past President-General of the Sons of the American Revolution.

September 24. The fiftieth anniversary of the naming of Leadville, Colo., was celebrated with pageantry reminiscent of the day when pay ore was first dug there. More than half a billion of dollars' worth of ore has been taken from the mines.

October 28. The tenth anniversary of the founding of the Republic of Czechoslovakia was celebrated in Prague with parades, addresses, and other patriotic exercises.

October 28. The one hundred fifty-second anniversary of the Battle of White Plains was celebrated in White Plains, N. Y., with a patriotic meeting sponsored by the White Plains Chapter, Daughters of the American Revolution, at which appropriate addresses were made.

November 11-12. The tenth anniversary of the signing of the Armistice that brought to an end the hostilities of the World War was largely celebrated throughout the United States, but most conspicuously in New York City and Wash-

ington, D. C. Sermons appropriate to the occasion were preached in various churches on Sunday while on Monday wreaths were placed on monuments and memorials with suitable addresses, and other ceremonies.

November 15-20. A series of musical festivals and memorial exercises to mark the hundredth anniversary of the death of Franz Schubert were held throughout the world, conspicuously in Vienna, Austria, where a fountain commemorating his genius was dedicated on November 18. See SCHUBERT CENTENARY.

December 9. The centenary of the publication of Webster's *American Dictionary* was celebrated in New Haven, Conn., by an exhibition in Woolsey Hall of documents concerning the dictionary, including manuscripts and the printed works of Noah Webster, and of books illustrating the history and evolution of English dictionaries.

December 17. The 25th anniversary of the first airplane flight by Orville and Wilbur Wright was celebrated at Kitty Hawk, N. C., by the laying of the corner stone of a monument to be erected by the United States Government in honor of the first flight of a heavier than air machine carrying a person. This event was preceded by a meeting in Washington, D. C., of an International Civil Aeronautics' Conference which was attended by 200 aviation experts from 40 nations, including Orville Wright and Charles A. Lindbergh. See AERONAUTICS.

WASHINGTON BICENTENNIAL COMMISSION. During the year there was published by the commission in pamphlet form "Statements and Proposed Plans Submitted by the Historian, Professor Albert Bushnell Hart, to the United States Commission for the Celebration of the Two Hundredth Anniversary of the Birth of George Washington" in which were suggested activities for the year 1928 to include the appointment of State Committees, local societies, and other agencies to cooperate with the Commission. It also contained statements of the various plans (about 40 in number) suggested, some of which were mentioned in the YEAR BOOK for 1927 (p. 167) and how they might be carried out. Of these plans, that authorizing and directing the "survey, constitution, and maintenance of a memorial highway to connect Mount Vernon, in the State of Virginia, with the Arlington Memorial Bridge across the Potomac River at Washington" passed Congress, and was approved by the President: A bill appropriating \$300,000 for the publication of George Washington's writings and miscellaneous manuscripts to be prepared under the direction of the Commission was passed by the Senate but failed of action in the House.

CELLULOSE. See CHEMISTRY, INDUSTRIAL.
CELTIC LANGUAGES AND LITERATURES. See PHILOLOGY, MODERN.

CEMENT. According to preliminary totals compiled by the U. S. Bureau of Mines from reports from practically all the important manufacturing plants, there was an increase of 1.6 per cent in production of portland cement in the United States and 2.1 per cent in shipments over the final totals for 1927. These increases, however, were somewhat less than corresponding increases for 1927, over the previous year, which were 4 and 5 per cent, respectively. During 1928 the plants operated at 74.0 per cent of their capacity as compared with 73.9 per cent in 1927,

based on the total estimated output of 159 plants at the close of December, 1928, and 155 plants at the close of 1927.

The following table gives the final estimates for 1928 by districts, compared with the figures for 1927, for both production and shipments.

PRODUCTION AND SHIPMENTS OF FINISHED PORTLAND CEMENT IN 1928, BY DISTRICTS
[In thousands of barrels]

District	Production		Shipments	
	1928	1927	1928	1927
Eastern Pa., N. J., & Md.	39,277	42,687	39,436	41,657
New York & Maine ^a	11,481	10,776	11,353	10,531
Ohio, Western Pa., & W. Va.	18,336	17,339	18,036	17,302
Michigan	13,900	13,965	14,041	13,708
Wis., Ill., Ind., & Ky.	22,684	22,022	22,593	22,395
Va., Tenn., Ala., Ga., Fla., & La.	15,936	16,016	15,732	15,530
Eastern Mo., Ia., Minn., & S. Dak.	16,687	14,358	16,503	14,567
Western Mo., Nebr., Kans., & Okla.	10,931	10,093	11,220	10,251
Texas	6,345	5,656	6,277	5,692
Colorado, Montana & Utah	2,744	2,179	2,575	2,294
California	13,704	14,581	13,745	14,433
Oregon & Washington	3,943	3,535	3,944	3,605
	175,968	173,207	175,455	171,865

^a Maine began producing in April, 1928 and shipping in May, 1928.

In 1927 the imports of hydraulic cement were 2,050,180 barrels, valued at \$2,956,451, and exports 816,726 barrels, valued at \$2,796,717. In 1928 the imports amounted to 2,192,729 barrels, valued at \$2,945,750; exports amounted to 824,656 barrels valued at \$2,938,702.

CENSUS. According to the report of W. M. Steuart, director of the Bureau of the Census, for the fiscal year ended June 30, 1928, preliminary work in preparation for the fifteenth decennial census of 1930, was in active progress. The census probably would cover population, agriculture, manufactures, distribution, mining, irrigation, and drainage, and in order to facilitate the accurate handling of large amounts of data, the department had been developing new machines for punching, sorting, and tabulating.

The collection of data for the census of institutions for 1926, dealing with prisoners, mental patients, and feeble-minded and epileptics, was completed, and preliminary summaries were issued. Work on the 1927 and 1928 reports proceeded satisfactorily. The survey of the financial statistics of the State governments for the fiscal year ending Dec. 31, 1927, was completed, and the report on this subject covering the same period of time, in the 250 cities having a population of 30,000 inhabitants or over, was in preparation, 132 such reports having been issued by the close of the fiscal year. As a result of many urgent requests, mimeographed revisions of the *Digest of State Laws Relating to Taxation and Revenue* (1922) were issued for the 45 States which levied inheritance taxes, and for the 12 States levying a tax on incomes.

The *Survey of Current Business*, a monthly summary of the reports of the department, carrying more than 1700 statistical series, about 100 of which were added in the fiscal year 1928, was supplied with data by 49 government agencies, 117 commercial and trade organizations, 35 trade and technical periodicals, and 42 private organizations. Weekly charts, and the quarterly forecasts of carloadings by the regional advisory boards were new features which added to the usefulness of the publication. The efforts of the vital statistics department to have all States enrolled in the birth and death registration areas succeeded in adding two States to the latter, and four to the former category. For summaries on

vital statistics and marriage and divorce, see articles under those titles.

* The seventh census of religious bodies (1926) was based on information secured directly from the individual churches, congregations, etc., and in connection with it many requests to include

a religious inquiry in the decennial census were made. Work in securing data for the biennial census of manufactures (1927) was carried forward with the cooperation of local chambers of commerce, boards of trade, etc., who in return were sent preliminary summaries of the reports. On Jan. 9, 1928, schedules were mailed to about 324,000 establishments, including 153 special schedules covering 226 of the 340 industries listed under the census classification, as compared with 87 such schedules, covering 119 industries, in the 1925 census. On May 28 the first preliminary report on aircraft was published, and by the end of the fiscal year 187,179 answers, or 93.1 per cent, were on file. Quarterly, semi-annual, or annual data on production were also collected by the department.

The first census of distribution (1927), taken in 17 cities, was completed, giving statistics for 93,928 retail and 17,012 wholesale establishments. The statistics enabled merchants to avoid duplications, etc., and a demand was made to include a national census of distribution in the fifteenth census, provision for this having passed the House of Representatives, and preliminary work being begun. Besides the annual collection of data concerning agriculture, a quinquennial census was made in 1925. A \$55,000 deficiency appropriation was voted so that more statistics and correlations of the data of the census might be compiled for the Department of Agriculture. The census of water transportation for 1926 was completed, and gave the American fleet, exclusive of Hawaiian and Porto Rican vessels, as numbering 42,286, with a gross tonnage of 21,666,814. Of these ships, 4737, with a gross tonnage of 3,310,977, were idle throughout the year.

The five-year census of electrical industries was taken for 1927, and of the 90,000 questionnaires mailed in January, 1928, 67,000 were answered by June 30. The data received from this census were to be correlated with those from the census of manufactures, making the most complete data on electric power equipment ever collected in the United States.

CENSUS, WORLD AGRICULTURAL. See AGRICULTURE.

CENTRAL AMERICA. The term generally applied to the southern portion of the North American continent lying to the north of the

Panama Canal and south of Mexico and consisting of the five states, Costa Rica, Guatemala, Honduras, Nicaragua, and San Salvador. See the articles on these respective countries. See EXPLORATION.

CENTRAL STATIONS. See DYNAMO-ELECTRIC MACHINERY; POWER PLANTS, STEAM.

CEREAL DISEASES. See BOTANY.

CEREALS. See BARLEY; OATS; RYE; WHEAT.

CEYLON, sē-lōn'. An island in the Indian Ocean off the southern extremity of Hindustan, belonging to Great Britain. Its extreme length from north to south, i.e. from Point Palmyra to Dondra Head, is 266 miles; its greatest width 140½ miles from Colombo on the west coast to Sangemankande on the east coast. Area, 25,332 square miles; population, at the census of 1921, 4,504,549, as compared with 4,106,350 in 1911; estimated at the end of 1925, 5,009,501. The registered movement of population in 1926 was as follows: Births, 206,888; deaths, 124,884; marriages, 28,756. The chief cities with their populations in 1921 were: Colombo, 244,163; Jaffna, 42,436; Galle, 39,073; and Kandy, 32,047. The number of vernacular schools in 1926 was: Government schools, 1101, attended by 113,137 boys and 54,778 girls; aided schools, 1821, attended by 129,990 boys and 88,302 girls; unaided schools, 1085, attended by 16,485 boys and 7024 girls; English and Anglo-vernacular schools, 384, attended by 57,225 boys and 16,098 girls.

Ceylon is almost entirely agricultural and specializes in export crops. Plantation tea, rubber, and coconuts make up the bulk of its products, but considerable amounts of cacao, cinnamon, citronella grass, and miscellaneous products are grown, largely by individual native farmers. Considerable rice is also raised, but more than half of the country's total consumption of this food supply is imported from India and other sources. Specializing in export crops as Ceylon does, its export record is an excellent gauge of its prosperity. The volume of exports in 1926 reached £33,576,599. Tea was the ranking product of the island, but rubber was rapidly approaching it in value of output. During 1926 a total of 217,000,000 pounds of Ceylon tea, valued at 213,000,000 rupees, was exported, as against 209,800,000 pounds valued at 199,697,000 rupees in 1925. Black tea is produced almost exclusively. While the distribution of Ceylon tea is very wide, the great bulk of it goes to English-speaking countries. Other important exports in the same year were: desiccated coconuts (754,000 cwts.); copra (2,400,000 cwts.); and coconut oil (570,000 cwts.). Of the 131,840,500 pounds of rubber exported, 81,625,400 pounds went to the United States and 40,806,600 to the United Kingdom. In 1926, 13,560 acres of Crown land were sold and settled. The livestock in the same year was reported to amount to 1500 horses, 1,537,000 horned cattle, 62,000 sheep, 48,000 swine, and 183,000 goats. Imports in 1926 amounted to £27,191,141. Nearly one-quarter of Ceylon's imports is made up of husked rice, obtained almost entirely from British India. Rice imports in 1926 amounted to 8,795,000 cwts. as against 8,321,000 for 1924. The bulk of the remainder of the imports is made up of cotton piece goods, coal, fertilizers, refined sugar, crude petroleum, kerosene, automobiles, fish, and gasoline.

The chief mining interest is plumbago, 65

mines being in operation at the end of 1926, and the exports in that year being 232,000 cwts. Gold, thorium, and monazite exist to some extent but have scarcely justified exploitation on a commercial scale. Gem quarries abound throughout the island and among the precious stones found are moonstones, rubies, cat's-eyes, and sapphires. The native manufactures include weaving and the making of tortoise-shell boxes, earthenware, lacquer work, jewelry, carving, etc. They are not of much commercial importance, however. The chief manufactures on a large scale pertain to agricultural products, including the extraction of coconut oil.

The revenue in 1925-26 was £8,301,077 and the expenditure £7,333,089. The shipping which entered and cleared in 1926 totaled 20,403,000 tons. At the end of December, 1926, there were 851 miles of railway open to traffic and several extensions were under construction. The administration, as embodied in an Order in Council of December, 1923, is in the hands of a governor, aided by an executive council of nine members, and a legislative council of 49 members (12 official and 37 unofficial). Of the unofficial members, 23 are elected to represent the territorial divisions, two to represent the Europeans, two the Burgher Community, one the Chamber of Commerce, one the Western Province Tamils, three the Mohammedans, and two the Indians.

During the year there was considerable speculation over the report of the Ceylon Commission, which had been appointed to study the governmental system described above. The Commissioners had been sent to Ceylon because the existing machinery of government had been a source of exasperation to officials and elected members alike and was the cause of well founded anxiety for the future. The report stated that nothing of real value was being done for the Ceylonese themselves and made the rather radical suggestion, that, with a few exceptions, the elected members should run the government and Ceylon should become a self-governing colony, practically on the same basis as Canada or Australia. Needless to say this report was rejected by the Baldwin government. Governor in 1928, Sir Herbert James Stanley.

The Maldivé Archipelago, consisting of 13 coral islets, 400 miles west of Ceylon, is tributary to Ceylon. They are sparsely settled by a mixed race of probably pure Aryan stock and governed by a native Sultan. The islands are covered with coconut palms, and yield millet, fruit, and coconut produce. The population numbered over 70,000 in 1921. The islanders are civilized and are great navigators and traders.

CHAMBERLAIN, GEORGE EARLE. American legislator and public official, died at Washington, D. C., July 9. He was born near Natchez, Miss., Jan. 1, 1854, and was graduated from the academic and law departments of Washington and Lee University in 1876. Taking up the practice of the law in Oregon, he early became prominent politically in the State as a Democrat. He was in succession a member of the State legislature, district attorney for the Third Judicial District, attorney-general of the State and, having removed to Portland, district attorney for the Fourth Judicial District. In 1902 he was elected Governor of Oregon, and in 1906 was re-elected. Three years later he was chosen United States Senator from Oregon for the term ending

1915. In the first session of the Sixty-third Congress he was chairman of the public lands committee, and he was also a member of numerous other important committees. He was reelected to the Senate for the term 1915-21, and during the period of the American participation in the World War held the important post of chairman of the Senate Military Affairs Committee. He was an outspoken advocate of preparedness and was the author of the military preparedness act of 1918. After his retirement from the Senate in 1921 he was appointed by President Harding a member of the U. S. Shipping Board for the term 1921-25. From the latter year until his death he practiced law at Portland, Ore., and Washington, D. C., and was engaged in important cases, among them being the one involving the Oregon school law, argued before the U. S. Supreme Court. Mr. Chamberlain represented the State in that case.

CHAMBERLIN, THOMAS CHROWDER. American geologist, educator, and originator of the planetesimal hypothesis, died at Chicago, November 15. Born at Mattoon, Ill., Sept. 25, 1843, he was graduated from Beloit College in 1866, and did post-graduate work at the University of Michigan, 1868-69. He became professor of natural science at the State normal school at Whitewater, Wis., and returned to Beloit as professor of geology in 1873, resigning in 1882 in order to continue research in geology. He also served as assistant State geologist of Wisconsin, 1873-76, and as chief geologist, 1876-82, and studied glaciers in Switzerland in 1878. He was geologist in the U. S. Geological Survey in days of the glacial division 1882-1907. He was appointed professor of geology at Columbian University in 1885, leaving in 1887 to accept the presidency of the University of Wisconsin, where he remained until 1892. He then joined the University of Chicago, as head of the geology department, and director of the Walker Museum. On his retirement, Oct. 1, 1919, he was made professor emeritus.

He was selected to accompany the Peary relief expedition in 1894. Among Chamberlin's other appointments were those as consulting geologist for the Wisconsin and the U. S. Geological Surveys, as commissioner of the Illinois survey, investigator of fundamental geological problems for the Carnegie Institution of Washington, 1902-09, and research associate for that foundation from 1909 until his death.

Chamberlin's work definitely advanced scientific understanding. Observing the quantity of spiral nebulae made visible by modern telescopes, he, with the aid of the astronomer, Forest Ray Moulton, evolved a cosmogony which superseded the formerly accepted explanations of the creation of the universe. Chamberlin's "planetesimal hypothesis" combined the nebular and meteoric theories, stating that planets are formed by accumulations of fast-moving matter which adheres to primitive nuclei by their rotational force. These planets, according to Chamberlin and Moulton, originated when another sun attracted the surface nebulae from our own sun, and, passing out of ken, left the rotating matter still under the influence of the main body. Chamberlin also contributed interesting scientific theories arising from his examinations of existing glaciers, and of glacial deposits in the northern United States.

Besides being president of the Chicago Acad-

emy of Sciences, 1898-1914, Chamberlin was president of the Illinois Academy of Science, 1907, and of the American Academy for the Advancement of Science, 1908, and he served on the commission for Oriental educational investigation, 1909. He also belonged to the American Academy of Arts and Sciences. He received the Ph.D. degree from the universities of Michigan and of Wisconsin in 1882, and the LL.D. degree from the University of Michigan, Beloit College, and Columbian University in 1887, and from the University of Wisconsin in 1904, and Toronto University in 1913. He was also given the degree of Sc.D. by the University of Illinois in 1905, and by the University of Wisconsin in 1920. Of the scientific books published during a period of extraordinary astronomical discoveries, Chamberlin's *The Origin of the Earth* (1916) was considered among the most significant. He edited the *Journal of Geology* for a number of years, and wrote more than a hundred scientific books and papers, including: *Outline of a Course of Oral Instruction* (1872); *Geology of Wisconsin* (1877-83); *Contribution to the Theory of Glacial Motion* (1904); *General Treatise on Geology* (with R. D. Salisbury, 1906); and *The Two Solar Families, The Sun's Children* (1928).

CHAMBER MUSIC. See MUSIC.

CHAMBER OF COMMERCE OF THE UNITED STATES.

A national federation of more than 1600 business organizations with headquarters at Washington. The Chamber was organized in 1912 primarily as a vehicle for the expression of national business opinion on important economic questions. The President of the United States and other government officials aided in its establishment and it has since served as an agency for the coöperation of business and government in the furtherance of national economic policy, holding itself ready at all times to advise the government regarding the needs of business and the possible economic effects of legislative measures. Membership in the Chamber consists of trade associations and local or regional chambers, these groups being represented on the Board of Directors, composed of 34 members chosen from geographical districts or specific fields of business. Policies of the Chamber are formulated only by resolution adopted at its meetings or by direct referendum, in order that they may reflect as accurately as possible the opinion of all classes of business represented in the constituent membership.

For the convenience of its members the Chamber maintains at its Washington headquarters service departments covering the main divisions of business activity. These departments are Finance, Transportation and Communication, Manufacture, Domestic Distribution, Foreign Commerce, Agriculture, Natural Resources, Insurance, and Civic Development. Two other departments, Commercial Organization, and Trade Association, deal with the activities of local chambers of commerce and of trade associations, and a third, the Research Department, covers the general field of business research. The Chamber also publishes a monthly magazine, *Nation's Business*, and issues from time to time reports on economic subjects.

Among the questions to which the federation directed its attention during the year 1928, as a part of its programme of activities, and which were to continue on its programme for 1929, were agriculture; street and highway safety;

produce exchange trading; banking in relation to the Federal Reserve System; establishment of standards of trade practice; commercial aviation, distribution census, business education and immigration; wholesaling; foreign trade policies; taxation with particular reference to the systematization of State and local taxation; special insurance taxes, development of national water power and forestry policies; human relations in industry; and national expansion. These questions reflect the Chamber's policy of following closely all the larger trends of business development and aiding in the carrying out of economic policies formulated by its membership.

In addition to the board of 34 directors, each elected for a term of two years, there were the following officers for 1928: President, William Butterworth, Moline, Ill.; chairman of the board, Joseph H. Defrees, Chicago, Ill.; vice presidents, A. J. Brosseau, New York, Robert P. Lamont, Chicago, Robert H. Ellis, Memphis, Tenn.; Paul Shoup, San Francisco; treasurer, Judge Edwin B. Parker, Washington, D. C.; and secretary, D. A. Skinner, Washington, D. C.

CHAMPIONSHIPS. See **ATHLETICS**; **BOXING** and other sport titles.

CHARITABLE TRUSTS. See **WELFARE WORK**.

CHARITY ORGANIZATION. See **RUSSELL SAGE FOUNDATION**.

CHARLES, SIR JAMES THOMAS WALTER. English sea captain, commodore of the Cunard Company's fleet, died at Southampton, England, July 15. He died a few hours after completing his last voyage before his expected retirement. He was born at Hursley, England, Aug. 2, 1865. He was educated privately, and went to sea in a sailing vessel in the British merchant marine, as a boy before the mast, in 1880. By the time he was 26 he had seen service in many parts of the world. He became a sub-lieutenant in the Royal Naval Reserve in 1891 and a lieutenant in 1895, the year in which he entered the service of the Cunard Line, as fourth officer of the *Cephalonia*. Five years later he became chief officer of the *Etruria*, and in 1904 he received his first Cunard command, that of the *Aleppo*, a cargo ship in the Mediterranean service. He had reached the rank of commander in 1907, and in 1914 attained that of captain. His commands included vessels of ever increasing size, until he was entrusted with the *Lusitania*, before the World War, and the *Mauretania*. In March, 1918, he was placed in command of the *Aquitania*, in which 47,867 American soldiers were carried across the Atlantic Ocean without the loss of a man. In recognition of his war services he was made an aide of King George of England and promoted to the rank of Knight Commander of the Order of the British Empire. He had been made a Companion of the Order of the Bath in 1911 and a Companion of the Order of the British Empire in 1919. Sir James became commodore of the Cunard fleet in 1921. Throughout his career at sea, in which he crossed the Atlantic Ocean 726 times, he was especially interested in the subject of safety at sea, and served as member of a committee on boats and davits, 1912-13, and as nautical adviser to the British delegation, participating in the International Conference on Safety of Life at Sea, 1913-14.

CHAUTAUQUA INSTITUTION. An educational movement established in 1874 by Lewis

Miller and Dr. John H. Vincent, both prominent in the Methodist Episcopal Church. The institution is non-sectarian in principle, although the original idea of the organization was a Sunday school for teachers where a series of correlated lectures and entertainments were presented during the months of June, July, and August. The three general fields of activity are the general assembly, consisting of an educational and popular series of lectures and addresses, concerts, and dramatic entertainment, etc.; the summer schools, offering courses of formal class-room instruction; and a home reading circle in which a set of four books is designated for reading during the year, in addition to a news narrative appearing in a monthly review. In 1928 there were 19 departments in the summer school, with 125 instructors and 2500 students, while the attendance at the annual session was estimated at 45,000. Financial support is obtained largely through individual gifts. Permanent buildings, valued at \$1,250,000, are owned by the institution at Chautauqua, N. Y., where the general summer assemblies are held and the Chautauqua Press is located. Officers: George E. Vincent, honorary president; Arthur E. Bestor, president; William L. Ransom, chairman of trustees; Shailer Mathews, chairman of the executive board; Charles E. Peirce, secretary; and Jessie M. Leslie, treasurer.

CHEESE. See **DAIRYING**.

CHEMICAL INDUSTRY, SOCIETY OF. See **CHEMISTRY, INDUSTRIAL**.

CHEMICAL SOCIETY, AMERICAN. See **CHEMISTRY, INDUSTRIAL**.

CHEMISTRY. In no branch of science is the advancement of knowledge so distinct as in chemistry and perhaps in no branch of science is the advancement so inconspicuous. The demonstration of these facts lies, however, in the enormous amount of literature descriptive of experimental work that is put out in every part of the civilized world in technical journals. Some of these contributions are indicated in the paragraphs that follow.

NEW ELEMENTS. Prof. B. S. Hopkins, of the University of Illinois, whose discovery of the element illinium was reported in 1926 (see **YEAR BOOK** for 1926, p. 149), announced the continuance of his search for the two elements not yet discovered. These he describes as similar to radium in being radioactive and both should be short-lived; that is, they should disappear after their isolation. No one knows when such elements as gold, silver, mercury, copper, tin, and lead first found a use among early peoples. These are elements which are found in nature in the uncombined form or are easily obtained from their compounds by simple processes. In discussing the evolution of the elements, B. Cabrera assumes (*Comptes rend.*, vol. 186, p. 228) the formation of atoms by means of the association of protons and electrons in the light of Aston's conception of "packing fractions" and makes special reference to the building up and disruption of atoms by cosmic processes, and also refers to the stability of an atom in terms of its radioactive properties.

ATOMIC WEIGHTS. Notwithstanding the great loss that came to this branch of chemistry by the death of Prof. T. W. Richards (q.v.), the foremost authority on the determination of atomic weights in the world, the work was to be still carried on by his associates in Harvard University and by

his pupils and admirers in the laboratories elsewhere.

According to J. Kaplan (*Physical Rev.*, vol. 30, p. 639) atomic hydrogen was passed from a discharge-tube into a 3-litre glass bulb, its presence being indicated by glowing thoria. The glow persisted for 3 seconds after interruption of the discharge, and white action spots on the glass for 6 seconds after interruption. Possibly atomic hydrogen can exist for 10 seconds. The atomic weight of titanium by analysis of titanium bromide was determined by G. P. Baxter and A. Q. Butler (*Jour. Am. Chem. Soc.*, vol. 50, p. 408) and the results gave 47.90 as the correct figure (silver being 107.88) which is in agreement with previous results. The atomic weight of copper was redetermined by R. Ruer and his results (*Zeit. anorg. Chem.*, vol. 169, p. 251) gave 63.544 ± 0.003 as the correct weight. The atomic weight of uranium was redetermined by O. Hönigschmidt and W. E. Schilz (*Zeit. anorg. Chem.*, vol. 170, p. 145) resulting in 238.14 being the atomic weight as redetermined by these chemists. A redetermination of the atomic weight of caesium by T. W. Richards and M. Françon (*Jour. Amer. Chem. Soc.*, vol. 50, p. 2162) confirmed the accepted atomic weight of that element, namely 132.81 (with silver accepted as 107.880). The analytical data were obtained by using caesium chloride. Some recent determinations of the atomic weight of silver made by O. Hönigschmidt (*Zeit. Elektrochem.*, vol. 34, p. 325) in the Munich laboratories gave (with nitrogen as 14.008) silver as 107.880 and 107.879. In later experiments on the ratio barium perchlorate (barium chloride) silver gave silver 107.880 with oxygen at 16.

ANALYTICAL CHEMISTRY. Under this heading improved forms of apparatus are discussed, and also improved methods for determining the constituents of a given compound. Both are important factors in the development of chemistry.

In March the U. S. Bureau of Mines reviewed the means of detecting the amount of carbon monoxide in mines, and published a description with directions for the use of an iodine pentoxide detector, the most essential feature of which is a small glass tube containing granular pumice stone impregnated with a mixture of iodine pentoxide and fuming sulphuric acid. This mixture is called hoolamite, after Hoover and Lamb, who patented the formula. When air containing carbon monoxide is forced through the tube by means of a rubber aspirator bulb and suitable valves, iodine is liberated and the original white of the granules is changed to various shades of bluish green or even violet-brown or black, depending upon the amount of carbon monoxide.

A new form of apparatus for the determination of carbon and hydrogen was described by I. Marek (*Arch. Hemiju.*, vol. 1, p. 188), in which combustion takes place in a current of pure oxygen. A simplified method of employing the morphine reaction of Pellagris and Vulpius is suggested by L. Ekkert (*Pharm. Zentr.*, vol. 69, p. 1). It is only necessary, he says, to heat the substance or its solution with a little sulphuric acid until the original red coloration deepens finally to brown, dilute with water, and extract separate portions with ether, chloroform, and ethyl acetate respectively. The color changes at various dilutions with water and the author describes the changes with the solvents, which he

regards as due to the formation and oxidation of apomorphine. The color changes observed with several morphine derivations and allied alkaloids are also described.

Of more than passing interest is a systematic method of separation and detection of all rare earth metals, except germanium, worked out by T. Kato (*Jour. Soc. Chem. Ind. Japan*, vol. 30, p. 658). This method is given in a tabular form. A mercury-vapor lamp working at 80,000 volts is described by N. Iarotsky (*Compt. rend.*, vol. 187, p. 459) which gave the maximum short wave ultra-violet radiation at 253μ . It has the distinct advantage that it may be brought close to the subject without the use of filters to absorb thermal radiations. O. Orth (*Chem. Fabr.*, 1928, p. 492) describes a new form of automatic pipette which has a glass tap at the bottom and is expanded to a bulb at the top. The graduation mark is on the constriction below the bulb and a capillary filling tube ends on a level therewith. The pipette is filled from a wash bottle at a lower level and any surplus runs back. The filling and air release connections are either fused in or taken through a rubber stopper. An agitator designed by G. N. Quam (*Ind. Eng. Chem.*, vol. 20, p. 922) for the purpose of determining rates of corrosion of metal samples by fluids is made of soft wood and carries a number of test tubes resting obliquely toward each side which contained the sample. These were fitted with bent breathing tubes to ensure aeration. The rocking (through 30°) is controlled by a hinge on the rocker arm and by the walls of the thermostat.

BIOLOGICAL CHEMISTRY. The application of chemistry to life processes has been productive of important results, and in recent years, notably by the introduction of insulin as a panacea for diabetes. This and other similar achievements are illustrative of the potent value of biological chemistry.

At the meeting of the American Chemical Society held in Swampscott, Mass., during September it was reported that chemists working in the Sterling Laboratory at Yale University had discovered that an inorganic substance may be the cause of tubercular growth, a fact which may open up an entirely new mode of approach in the search for an immunizing agent. These chemists have prepared from the living tubercle bacilli a series of fatty acids which is new to chemistry, and when these acids have been introduced into the bodies of rabbits, tubercles like those which exist wherever tuberculosis is present, whether in human beings or animals, are formed in the bodies of these rabbits, though the animals do not manifest any of the other symptoms of the disease. That is, for the first time in experimental biology, it has been demonstrated that one of the outstanding signs of tuberculosis, the tubercle, has been generated in rabbits by a purely chemical product. Hitherto, the only way in which typical tubercular tissue, the nodules known as tubercles, could be produced was by inoculating them with the living bacillus of tuberculosis. This discovery, that a non-living substance may be the cause of tubercular growth, opens up a new mode of approach in the search for an immunizing agent. In the past there has been no way of proving whether the growth of the tubercle in tubercular organisms was the result of direct action of the living bacillus.

According to G. Embden (*Klin. Woch.*, vol. 6, p. 628) contraction of muscle is accompanied by

liberation of ammonia and this is rapidly followed by recombination. Adenosinephosphoric acid and lactacidogen are regarded by this author as active substances of striped muscle and, he believes, their special formations. According to S. G. Villimott (*Biochem. Jour.*, vol. 22, p. 67) the juice of the navel orange contains sufficient vitamin-A in 5 cc for the growth and well-being of a rat; 10 cc of Valencia orange juice are adequate for the vitamin-B requirements of a rat. Vitamin-D is not present in the navel orange juice. According to C. Lundsgaard (*Chem. Zentr.*, 1927, p. 1974), the action of insulin depends on an intramolecular rearrangement of the sugar with formation of neoglucose; sufficient insulin for the purpose is normally present. The effect of insulin depends on the presence of some substance existing in fresh muscle; if this is provided the author believes that the action can be reproduced *in vitro*.

It was found by O. Laxa (*Loit*, vol. 7, p. 617) that the dialysable portion of human milk contains sulphate, and that calcium phosphate is present in a non-dialysable form. Also various analytical data comparing the ash of human milk with cow's milk were presented by the author. Quinine, according to B. P. Shvedski (*Zhur. exp. Biol. Med.*, vol. 4, p. 605) even 1 part in 200,000 can be determined by Mayer's potassium mercuric iodide reagent. Etheral blood extracts, he finds, may give high values. Five minutes after the injection of 0.5 grains of quinine hydrochloride into animals, 82-95 per cent has disappeared from the blood. Ergosterol, identified crystallographically and by Salkowski's reaction, has been isolated by W. Küster and O. Hörth (*Berichte*, vol. 61, p. 809) from the alcohol-sulphuric extract of ox blood obtained by treatment of the whole blood by Mörrner's method. H. Wu and D. V. Wu report (*Chinese Jour. Physiol.*, vol. 2, p. 173) that rats do not grow well on exclusively vegetarian diets, although when the small Chinese cabbage is added, practically normal growth is obtained. As the normal vitamin-D content of this vegetable is low, this would seem to give the reason for this condition.

According to M. Kunitz and H. S. Simms (*Jour. Gen. Physiol.*, vol. 11, p. 641) the following improvement in dialysis is recommended. The solution to be dialysed is contained in a stoppered collodion sac with a marble or a bubble of air. The sac is placed in a test tube which is in a rocking machine, and distilled water is let into the test tube outside the collodion sac. The movement of the marble or bubble of air agitates the solution and accelerates the dialysis. A new cardiac accelerator, differing from adrenaline, was obtained by H. G. Cameron (*Endocrinol.*, vol. 10, p. 577) by fractional precipitation of a defatted neutral acetone extract of ox adrenals. It is called cardaissin. An improved modified form of the Autenrieth colorimeter is described by E. Kaufman (*Biochem. Zeit.*, vol. 197, p. 141), which may be used for the determination of blood sugar and of the oxygen capacity of blood. W. H. Dore points out (*Science*, vol. 67, p. 324) the interesting fact that the presence of boron is essential for the normal growth of tomato plants. Plants deficient in boron exhibit an excessive accumulation of sugar in the leaves which become purple.

GENERAL CHEMISTRY. Under this heading there is grouped a series of references to papers that do not seem exactly to fit in under the other

headings, but which are worthy of mention as they show some evidences of progress in the development of chemistry.

The heat of mixing a number of pairs of the metals mercury, potassium, sodium, tin, cadmium, bismuth, zinc, lead, and antimony was measured by M. Kawakami (*Zeit. anorg. Chem.*, vol. 167, p. 345). Where no compound formation occurred, the heat of mixing was, in general, negative, but in cases where compounds are known to have been formed, the heat is positive. It appears therefore probable that intermetallic compounds which can exist in the solid state do not dissociate on fusion. B. Lewis in discussing the nature of active nitrogen describes his experiments showing that ammonia is formed only when active nitrogen is mixed with atomic hydrogen, indicating that the former contains nitrogen atoms. He finds that no ammonia is produced when the nitrogen or hydrogen alone is activated and hydrazine is never formed. He contends therefore that the current interpretations of the spectroscopic data concerning nitrogen are correct, and believes that glowing, active nitrogen is probably a heterogeneous mixture of nitrogen atoms and excited nitrogen molecules.

A. W. C. Menzies in *Nature* (vol. 121, p. 457) suggests the term "dative" to describe the linking involved when one atom contributes both of the shared electrons. According to a study by A. P. Rollet (*Compt. rend.*, vol. 186, p. 748) silver sesquioxide Ag_2O_3 , the existence of which has been disputed, was formed by the anodic oxidation of a silver electrode in an alkaline solution containing potassium, with a mercury cathode. The concentrations used were 1-12N and the temperatures 0-30°C. The formation of this compound together with that of Ag_2O was confirmed from the curves relating the intensity of the current discharge and the time.

The interesting subject of free-space numbers occupied the attention of W. Herz who reports (*Zeit. anorg. Chem.*, vol. 171, p. 14) that for a number of liquids the ratio of the excess of the critical volume over the zero volume to the product of the critical volume by the free-space numbers at the critical temperature has a value of about 0.87; the value rises slowly on ascending a homologous series. It thus appears that even at 0° absolute, there are spaces between the molecules. In an interesting paper, C. S. Piggot (*Jour. Wash. Acad. Sci.*, vol. 18, p. 313) shows that the average radium content of Stone Mountain (Georgia) granite is 4.826×10^{-12} gram per gram of granite.

In studying the question as to whether aluminum has a transition point, A. Cchulze (*Zeit. Physik.*, vol. 49, p. 146) found that measurements of the electrical resistance of very pure aluminum (99.94 per cent) indicated that no allotropic change occurs in that metal in the neighborhood of 610°C. The constitution of germanium received much attention from F. W. Aston, and his experiments (*Nature*, vol. 122, p. 167) with germanium tetraethyl and tetrafluoride indicate that germanium has the following isotopes in order of descending intensity: 74, 72, 70, 73, 75, 76, 71, 77. It is unlikely that any of these lines is due to hydrogen compounds, but the intensity of Ge^76 is in doubt. Of these mass numbers only 72 and 73 are peculiar to germanium.

MINERALOGICAL CHEMISTRY. A knowledge of the composition of minerals is a valuable source of information concerning raw materials avail-

able for use in many industries. The study of other applications of chemistry to geological conditions leads to greater information concerning the formation of strata, the age of the earth, and other like subjects.

From seismological, petrological, and astronomical-geodetic considerations, S. Mohorovicic (*Arch. Hemiju*, vol. 1 p. 95) concludes that the earth consists mainly of iron, magnesium, silicon, and oxygen, while the moon contains in addition relatively more aluminum and calcium. The rigidity of the earth is a little more than three times that of the moon. Venus and Mercury probably possess a composition similar to the earth, while that of Mars is closer to that of the moon. The planetoids are of similar composition to meteorites, while the planets more distant from the sun probably resemble the fixed stars in their composition and are not yet definitely known. According to C. C. Farr and M. N. Rogers (*Nature*, vol. 121, p. 938) the formation of higher hydrocarbons from methane by alpha-particles observed by Lind and Bardwell may account for the genesis of petroleum, in view of the fact that in the middle United States, the regions in close proximity to oil fields are also regions in which the natural gases have a high helium content. Tentative calculations suggest that the formation of 1 cubic foot of helium would produce nearly 2 tons of liquid hydrocarbon.

A new mineral named *arrojadite* is announced by D. Guimaraes (*Chem. Zentr.* 1927, p. 2172). It is monoclinic, dark green, with colorless to light green pleochroism. Its hardness is about 5. This same writer announces (same reference) a new mineral from Minas Geraes, which he names *schwegite*, which is reddish gray in color and has a hardness of 5.5. A new mineral consisting of mercury and palladium (Pd Hg) was described by L. J. Spencer (*Min. Mag.*, vol. 21, p. 397) who found it among the diamond washings in the Potaro River, British Guiana. It has received the name of *potarite*. *Berthonite* is the name of a new mineral from Tunis described by H. Buttgenbach (*Ann. Soc. Geol. Belg.*, vol. 46, p. 212) the analysis of which showed its formula to be $5\text{Pbs}, 3\text{Gu}_2\text{S}_3, 7\text{Sb}_2\text{S}_3$. A new platinum *sulpharsenide* has been found in the Rustenburg norites of South Africa. Its composition expressed by the formula $\text{Pt}(\text{SAs})_2$ (*Jour. Chem. Met. Min. Soc. South Africa*, vol. 28, p. 281).

ORGANIC CHEMISTRY. This branch treats especially of the nature and properties of the carbon compounds. The outstanding event of the year seemed to be the production of synthetic gasoline, suitable as a motor fuel, from coal. Concerning the details of which see *Motor Fuel* under CHEMISTRY, INDUSTRIAL. The successful accomplishment of this synthesis presents obvious evidence of the possibilities of organic chemistry.

A method for the separation of the ovalbumin from the conalbumin was described by H. Wu and S. M. Ling (*Chinese Jour. Physiol.*, vol. 1, p. 431), which is based on the fact that ovalbumin undergoes coagulation by shaking, while conalbumin does not. It is found that 10 per cent of the total albumin of egg white is conalbumin. A report of a series of color changes, obtained when phenacetin is warmed with resorcinol and sulphuric acid, and the mixture cooled, diluted, and treated with alkalis with subsequent extraction was made by L. Ekkert (*Pharm. Zentr.*, vol. 69, p. 98). A method for the determination of selenium in organic compounds was

suggested by W. E. Bradt and R. E. Lyons (*Proc. Indiana Acad. Sci.*, vol. 36, p. 195) as follows: The substance, free from halogen was heated with nitric acid in a sealed tube, the solution being made alkaline with potassium hydroxide (free from halide), then slightly acidified with nitric acid, and then made neutral with excess of zinc oxide, and finally titrated with silver nitrate in presence of sodium chromate. E. Gruner (*Zeit. Angew. Chem.*, vol. 41, p. 446) published an extensive review of the various theories of the constitution, and of the cause of the color of ultramarine. As is well known, the principal pigment of the Indian red pummelo and the pink grape fruit is lycopin, M. B. Matlack (*Amer. Jour. Pharm.*, vol. 100, p. 243) finds that the pulp from the sweet orange, satsuma, and king mandarin give less definite tests when subjected to the Molisch microcrystallization method due to an unsaponifiable compound with a melting point of 75° that influenced the form of the crystals. Spectroscopic examination of light petroleum and alcoholic extract of orange and tangerine pulp indicated the presence of carotin and xanthophyll.

According to K. Suzuki and Y. Kaishio (*Bull. Agric. Chem. Soc., Japan*, vol. 3, p. 33) the yellow color developed when excess of a 2 per cent solution of sulphanic acid in 10 per cent sulphuric acid, and concentrated acid to produce 11–15 per cent solution are added to an aqueous solution of histidine, the mixture shaken and rendered alkaline with sodium hydroxide, is compared with that of 0.01 normal potassium dichromate solution. The chemical, physical, and pharmacological properties of some commercial esters of ophthalmic acid, and especially the methyl ester, in comparison with those of ethyl phthalate were made the subject of a valuable study by J. A. Hardy and L. F. Hoyt (*Jour. Amer. Pharm. Assoc.*, vol. 17, p. 458). An important work on the extraction of crystalline carotin-like substances from the flowers of *Ranunculus steveni* and of lycopin from rose "hips" was published during the year by H. H. Escher (*Helv. Chim. Acta.*, vol. 11, p. 752).

According to M. Dixon (*Biochem. Jour.*, vol. 22, p. 902) carbon dioxide has no effect on the rate of the autooxidation of cysteine or reduced glutathione induced by the addition of iron, copper salts, or freshly dissolved hæmatin. The last compound breaks up into a mixture of simpler compounds after keeping for several days. This mixture although retaining the catalytic power of the original hæmatin becomes susceptible to inhibition by carbon monoxide. S. Ghosh and N. M. Ghosh (*Jour. Indian Chem. Soc.*, vol. 5, p. 477) describe their method for the extraction of concessine and the details concerning the new alkaloids kurchicine (melting point 175°) and kurchine (melting point 75°) which they have succeeded in extracting from kurchi bark (*Holarrhena antidysenterica*).

PHYSICAL CHEMISTRY. The application of chemistry to problems in physics is more and more becoming a recognized method of solving important questions in science.

Among those of recent occurrence is the theory advanced by Dr. Selig Hecht of Columbia University at a meeting of the American Optical Society held in Washington on November 4. His contention was that when light falls on the eye, it strikes a known chemical substance, visual purple, which has been isolated from the rods

of the eye and subjected to extensive tests. The light apparently has a chemical effect on this purple, splitting it into two substances now known as P and A. These have not been isolated. At low intensities of light, only minute amounts of these two substances are created and they recombine immediately into visual purple. In these cases the light stimulus is below the threshold of vision and there is no consciousness of it. At higher intensities the two substances are created in such amounts that they do not recombine as fast as they are made, but either one or the other of them combines with a second substance in the eye which has not been localized and is now purely hypothetical. This second combination sets up an impulse, possibly electric, along the visual nerve fibres to the brain and the result is vision.

The scattering of hydrogen canal rays in hydrogen was determined by a thermopile method by G. P. Thomson (*Zeit. Physik.*, vol. 46, p. 93) and his results agree with those obtained by the photographic method, which is therefore thus established. A Russian chemist, E. N. Gapon, in an article (*Russ. Phys. Chem. Soc.*, vol. 60, p. 249) presents the expressions for the internal pressure of a liquid which he obtained and based on the assumption of proportionality of the total surface energy and internal pressure. From these equations he establishes relationships between contraction and expansion, and between surface tension and contraction of liquids.

See CHEMISTRY, INDUSTRIAL; PHOTOGRAPHY.

CHEMISTRY, INDUSTRIAL. No startling discovery in the development of industrial chemistry was announced during the year, but according to the reports of the papers read at the sessions of the Institute of the American Chemical Society held in Evanston, Ill., during the summer there was manifested an increasing belief in the potency of chemistry in many branches of industry, and conspicuously in agriculture. One chemist contended that there was "no question of being able to feed as many as can find standing room on this planet." He asserted that when the arable land of the earth reaches its maximum production, through intensive cultivation, the chemist can synthesize enough beyond for all possible human needs. He has already made a beginning of synthetic creation and with the light of the sun and the nitrogen of the air at his command, he can go on indefinitely. As an instance is cited the ability of 30 men working in a factory the size of a city block to produce "in the form of yeast" as much food as a thousand men can produce through the cultivation of 57,000 acres under ordinary agricultural conditions. It was also suggested that the common black mold be allowed to relieve orchards of lemons and other citrus fruits of their expensive service of furnishing acid. The theory of the indestructibility of matter gives support to this claim of the chemist. It is necessary only to recover and to transmute into new forms what use in other forms has dissipated. When the chemist finds out, for example, what "lignin" is, there will "not be any question about the utilization of surplus farm products." For every particle will find some by-use, if not needed in the form in which nature produces it.

AMERICAN CHEMICAL SOCIETY. As usual two meetings were held during the year. The first in St. Louis, Mo., during April 16-20 at which 503 papers were presented before 15 divisions and 1307 members registered. Announcement was

made that \$360,000 had been given to the Society for the support and improvement of *Chemical Abstracts*. The second meeting was held in Swampscott, Mass., during September 10-15 at which 397 papers were presented before 19 divisions. There were 1922 members present. Prof. Samuel W. Parr, who was president during the year, delivered his address on "Chemistry and the American Chemical Society." The present membership is about 16,500.

INSTITUTE OF CHEMISTRY. This organization which is a part of the American Chemical Society held its second annual session during July 23-August 18 at Northwestern University in Evanston, Ill. The gathering was made possible by a gift of \$10,000 from an anonymous donor, and \$5000 guaranteed by Northwestern University. The director was Dr. Frank C. Whitmore, head of the Department of Chemistry in Northwestern University. The aim of the Institute was to present a series of papers which were read and discussed; also there were important conferences and round table talks on various phases of chemical science. The institute was opened with a discussion entitled a "General Survey of the Problem," which was participated in by C. A. Browne, H. G. Knight, S. W. Parr, G. M. Rommel, H. J. Sweeney, and O. R. Sweeney. In Dr. Browne's address he gave the results of a questionnaire sent to prominent chemists on the leading accomplishments of agricultural chemistry during the past fifty years. The speakers explained how it was possible for chemistry to increase immensely the wealth of the farm by developing new products and new markets and by eliminating waste.

On subsequent days C. L. Gabriel, H. T. Herrick, O. R. Sweeney, W. E. Emley, and James Slayter spoke on "Corn: Products from the Grain" and "Corn: Products from the Stalks and Cobs." Their general contention being that cellulose is the cheapest thing a plant produces, manufacturing it mainly from solar energy by photo-synthesis. Trees have their value in great part on account of the cellulose which they contain. If cellulose can be profitably derived from trees which require any time up to 80 years before they are ready to harvest, why not get the same material from a plant which can be harvested within six months after the seed is sown, especially if the cellulose is found in a by-product of little value obtained in the production of a money crop of much value? It was pointed out by Professor Sweeney that there is no such sun energy trap as in the Corn Belt anywhere else on earth, certainly not where the white man can live and thrive. American industrialism should be located in the Middle West where food for men and eventually constantly renewed energy for man's machines is on tap. The concentration of a vast population on the seaboard is uneconomic. The overhead cost of maintaining such a great mass of people within 50 miles of Manhattan Island, is becoming unbearable, and Los Angeles already shivers, despite climatic advantages, at the prospect of coming thirst.

Other papers were presented on "Small Grains" and "Products from Straw and Hulls," by H. E. Barnard, W. E. Emley, and C. S. Miner, while the general topic of "Cellulose" was elaborately discussed by many chemists. Weeds, straw, molds, such as stale bread, and the stalk of and cob of corn, found speakers who communi-

cated visions of a new and more abundant wealth from their products. How the common vegetable molds, which in a former generation were considered nuisances by the housewife, have been tamed and disciplined to the uses of modern synthetic organic chemistry and fermentation was the theme of A. L. Kendall who demonstrated that these microscopic plants and their capacity to deal with nitrogen are as essential to human nutriment as Charles Darwin proved the earthworm to be indispensable to agriculture.

According to Harry N. Holmes, in the study of the structure of organic matter, the chemist dealing with colloids finds that the data which help to improve the lubrication of automobile engines aid the highway engineer and traffic executive in dealing with the drying and drainage of wet roads and assist the student of cancer.

In the continued study of economic values in refuse farm products carried on by chemists, much interesting information was brought forward. Dr. A. W. Schorger pointed out that nature is often inefficient in choosing the field for her vast operations. Thus slack pine, which grows in Washington and Oregon, has been found to grow twice as fast when transplanted to New Zealand. Certain species of carp grow four times as large, to a size of 12 pounds in fact, when changed from one stream to another. Peanut shells were revealed as a new possible source of artificial silk by R. L. Stern.

Distribution and commodity competition were fruitful themes, and Harrison E. Howe pointed out that "it costs as much to take a box of oranges from Jersey City across the river to New York and place it in the hands of the retailers as it does to pick the crop in California, sort it, pack it and ship it clear across the country." "Organic Peroxides" proved full of interest as pointed out by V. R. Kokatnur who said: "Everybody in a civilized country knows hydrogen peroxide and its general usefulness. It can be described as being composed of two parts, an oxide head and a hydrogen trunk. If this oxide head of hydrogen peroxide is attached to a trunk of a different genus such as one severed from organic compounds, we get an organic peroxide. Nature has many such organic peroxides. When a drying oil, as linseed oil, tung oil, or turpentine, dries in air, it forms a tough film of organic peroxide. In a sense the paint and varnish industry may be said to depend on this discovery. When a beautifully colored leaf or flower fades or changes its color in the autumn it is perhaps due to the bleaching of such colors by peroxide formation."

Some of these peroxides will explode with terrific force, even in water. When it is recalled that most of our present explosives are useless when dampened, it is easy to realize how important a war factor this chemical may become. Germany, Holland, and Switzerland saw its possibilities and had done some work on its development, but the United States had done very little. Peace-time application of this explosive would make the life of the farmer easier. When he has to uproot tree stumps in under-water areas, he is confronted with expensive dynamiting. Yet by merely pouring the proper peroxide in the water around the stump and igniting he could blow the stubbornest root to smithereens. But not alone in offensive warfare can the world utilize these

peroxides, for they can be used to counteract gas attacks. Mustard gas when treated with peroxide becomes tame.

Thomas Midgley, Jr., of Dayton, Ohio, discoverer of ethyl gas and an authority on synthetic rubber, said that it was hard to beat nature. "As long as rubber can be sold for about 20 cents a pound and the territory available for growing rubber is being extended, synthetic rubber will have no status." Synthetic products claimed attention and it was prophesied that vegetables are to be replaced by a new type of plant, probably grown on the Sahara Desert, which will store up tremendous amounts of energy from the sun. Fats and sugars are to come from shale oil, sawdust, and coal. Vitamins will be produced artificially or through concentrated cultivation of certain products which yield them in large quantities. By regulating vitamins, chemists expect to influence the complexion and the size of human beings. When the future citizen goes shopping for clothes, he's expected to buy clothes made out of corn stalks, sawdust, or other waste. People will live in synthetic houses. Dr. Gerald Wendt expects that "everything about the future home will be made of synthetic materials. The house will be built of concrete and steel, both synthetic materials. The walls will be finished in lacquered metals, which can be washed down with a hose. Draperies and rugs will be of rayon."

C. F. Knipp contended that "science can now make rain, but the experiment is still in the laboratory stage. Ultimately however, the work may be done in the open and when it is, the dust of the air and even the lowly coal dust will come in for greater glory, for these particles help science to make the desired precipitation." Backing his assertion with a demonstration, Professor Knipp took a vessel in which the air had been saturated with moisture just short of precipitation. When he expanded the air the moisture turned into fog. Then he introduced dust by lighting a match near the retort and allowing the smoke to filter in. Immediately the fog turned into rain. "If the air over the City of New York were right at the saturation point and we wanted rain, all we would have to do would be to blow some of the city smoke into the air and we would have rain."

Concerning "Resins," the Rev. J. A. Nieuwland said: "An interesting development of modern chemistry is that as one use for material goes out, others come in to take its place. At present there are practically no dyes made from aniline, but the production of aniline is greater than ever, since it is used for many other things, including resins. The practical importance of resin is that it can be used for more and more of man's needs, especially in relation to the use of electricity. Certain types of furniture will probably be made from resins and it is predicted that even automobile bodies, or at least parts of them, will be made from resins before long."

That chemical research may be secretly preparing new and deadlier poison gases for the next war was discussed by Sir James C. Irvine, who asserted that the country possessing the most efficient chemical industry possessed also the most efficient instrument of war. He declared that no peace treaty or visiting commissions can control or even detect research designed to furnish lethal agents for the future and that this research may be going on anywhere in

preparation for the next war. The whole machinery of war may be scrapped, warships may be sunk, armies disbanded, and fortresses demolished, but the chemical factory must remain, and, so long as it exists, it is a potential war factory.

According to Victor Cofman, who delivered five lectures on various phases of colloids, "science may harness the sun to produce sugar, may turn the waste of the present era into the foods of the future, may apply light to living organisms to aid in the growth of others and achieve similar miracles in the decades to come. But it must always stop short of the development of synthetic life in the complex form of man."

In regard to "Chemistry and Other Sciences in National Defense," H. E. Bullis said, "We have outlawed crime, but we control it by keeping our police forces prepared with the most efficient weapons. History has shown us that once in war, the weapons with which it is waged cannot be controlled. Gas will undoubtedly be used in the next war. We should continue our research work so that we may effectively protect our country." In closing it was announced that the 600 scientists in attendance at the four weeks institute had come from all over the world. Among the long-distance visitors was one who taught four years in China and another traveled 21,000 miles to attend. From Scotland came Sir James C. Irvine.

SOCIETY OF CHEMICAL INDUSTRY. Some 140 members of this society arrived in Quebec in August and after visiting Montreal, Ottawa, and Toronto in Canada, crossed into the United States and inspected centres of chemical industries at Niagara; Akron, Ohio; Pittsburgh; Washington; and Wilmington, and then held their forty-seventh annual meeting in New York City during September 3-7, at which President Carr delivered his retiring address on "Research and Chemical Industry." Also the annual presentation of the Messel Medal was made to Robert A. Millikan who gave an evening lecture on "Available Energy." The new president chosen at this meeting was Arthur D. Little, of Boston, Mass. In New York City, as elsewhere, exceptional opportunities of visiting technical plants were afforded to members of this international organization.

MEDALS. The Edison Medal of the American Institute of Electrical Engineers was awarded on Dec. 14, 1927, to William D. Coolidge of the research laboratory of the General Electric Company for his "Contributions to the incandescent electric lighting and X-ray arts." The Chandler Medal was given on Dec. 16, 1927, to Prof. Moses Gomberg of the University of Michigan for his lectures on "Free Radicals in Chemistry Past and Present," delivered at Columbia University. The Perkin Medal of the Society of Chemical Industry was awarded on January 13 to Irving Langmuir for his studies on the application of chemistry to electric lighting. The Nichols Medal of the American Chemical Society was awarded on March 9 to Prof. Hugh Scott Taylor, who fills the Jones chair of chemical research at Princeton University, for his studies in catalysis. The Willard Gibbs Medal for the best paper presented before the Chicago section of the American Chemical Society was awarded on May 25 to William D. Harkins for his paper on "Surface Structure and Atom Building." The Messel Medal of the Society of

Chemical Industry was awarded on September 4 to Robert A. Millikan for his work on the structure and relations of atoms. The Grasselli Medal of the Society of Chemical Industry for the best paper presented before any meeting of the Society during the preceding five years was awarded on November 2 to Dr. H. J. Rose for his paper on the "Importance of Coal Preparation in the Manufacture of Gas and Coke." The Chandler Medal was given on December 7 to John A. Wilson of Milwaukee, Wis., president of the American Leather Chemists Association, in Havemeyer Hall, Columbia University, when he delivered the Chandler lecture on "Chemistry and Leather."

ALUMINUM. The long-sought method for the electro-deposition of aluminum on metal was announced on August 18 by Prof. D. B. Keyes of the University of Illinois at a meeting of the American Chemical Society Institute. Aluminum by itself has very little tensile strength or elasticity. This prevents its use as a structural material in spite of its light weight. The aluminum alloys are superior in these properties, but will not stand corrosive agents. It therefore becomes necessary to apply a thin continuous coat of aluminum free from holes, to steel and other metals. As it is impossible to electro-deposit aluminum from a water solution, the new method makes use of organic metallic complexes that are liquid at ordinary temperatures, or at temperatures slightly above. It is believed that this new method will have universal application to all metals. Some possibilities are boron, the hardest known metal, which could make the headlights of an automobile outlast the car; tungsten, which would greatly lengthen the life of much of the electrical equipment; titanium, a non-corrosive, used in some paint production, and beryllium. The new method, it was thought, also would improve greatly the electro-deposition of chromium, an industrial process of importance.

HELIUM. A new helium plant, costing approximately \$700,000 it was reported in April, was to be erected and operated by the U. S. Bureau of Mines in Amarillo, Texas. This non-inflammable gas was to be extracted from natural gas out of the oil company's leases on the cliffside structure in Potter County, Texas. An important announcement was made in July that the hitherto perplexing problem of bulk shipment of helium gas, with its attendant hazards, from the Government's fields in Texas to Lakehurst, N. J., and other dirigible stations, had been solved by the construction of a railroad car built on the multiple tank principle. The value of this new conveyor lies in its adaptability to large shipments of any gas ordinarily compressed to not over 2000 pounds to the square inch. Through this means of gas transportation, supplies of carbon dioxide from waste sources may be carried hundreds of miles to big cities. A few oxygen plants henceforth can supply a territory now requiring dozens of smaller plants, because the cost of transportation is less than the cost of efficient small plants. Hydrogen, now wasted in many industries, also may be shipped to synthetic ammonia plants to be converted into fertilizer. Waste is checked and national wealth is conserved. The new cars, upon which are mounted 28 separate alloyed steel containers, are to replace the old glass-bottle method of shipping helium.

The interesting announcement of the discov-

ery of helium gas in the petroliferous gas coming from bores at Roma, Queensland, was made in September. Under the Petroleum Act of Queensland, all helium recovered belongs to the State. Prof. B. D. Steele of the University of Queensland was the first to detect the appearance of helium in a sample of gas from one of the Roma bores. He estimated that it was present to the extent of one in 12,000 parts, or .008 per cent. A sample of gas from another Roma bore, in which oil had also made its appearance, was submitted to Dr. C. Coleridge Farr of the University of New Zealand, who had been making a comprehensive search for this rare element in the natural gases of Australasia. His examination of the sample showed helium equal to one in 2500 parts, or .04 per cent.

NITROGEN. There was a considerable development in the production of nitrogen during the year. The United States *Commerce Reports* in September noted that the world's largest air-nitrogen fixation plant, located about 80 miles south of Berlin, had effected enormous increases in production of fixed nitrogen in ammonium sulphate and calcium nitrate and of its synthetic motor fuel obtained by lignite hydrogenation. Fixed nitrogen production of Leunawerke, at present 1400 tons of nitrogen daily, or over 500,000 tons annually, is to be raised to 1500 tons daily, or another 36,000 tons annually. The German Chemical Trust's other nitrogen-fixation plant, Oppau at Ludwigshafen, accounts for a further 100,000 to 150,000 tons of fixed nitrogen a year. These figures make a total German dye trust production of a maximum of 650,000 tons a year, or easily 80 per cent of the total German production, including the 75,000 tons of fixed nitrogen produced each year by the calcium cyanamide and the coke and gas plant groups.

Earlier in the year, Dr. J. Beub delivered an address on the future of the industry in which he spoke of the satisfactory results obtained in agriculture by the use of the new fertilizers, nitrate of lime and nitrophoska, which the German syndicate had developed. He pointed out the important part which the industry had played in supplying the world's food requirements. Dr. F. G. Cottrell of the U. S. Department of Agriculture appreciating this situation in an address in January pointed out that the fixation of atmospheric nitrogen had reached a point which threatens the dominance of Chile's nitrate deposits in the world's fertilizer market and may oblige the Chilean producers to adjust their plans of production and sales so as to conform with the competitive situation thus brought about. He said:

It is not yet fully appreciated by people closely associated with the fixed nitrogen industry, how fundamental and revolutionary are the changes it has introduced. Chilean nitrate deposits have determined world prices in nitrogen products for nearly a century, because until recently they were the only independent and practically unlimited sources of such compounds. Today the fixed nitrogen industry has overcome difficulties limiting its production to such a degree that the Chilean monopoly is no longer in complete control of world nitrogen prices. Hereafter, Chilean nitrate production will have to follow and adjust itself to world price levels, established by costs in synthetic nitrogen production.

An interesting application of the use of nitrogen was announced in September by T. F. MacGregor who found that fruit picked three weeks

previously and placed in cans from which air had been expelled and nitrogen substituted in an attempt to arrest putrefaction, proved successful.

POTASSIUM. The search for commercial potash supplies being conducted by the Federal Government in Western Texas and East New Mexico led to the preparation of a report by the U. S. Bureau of Mines on the methods and costs of potash mining in Germany and France. Consideration was given to the possible application of similar methods when mining of the American potash deposits is undertaken. Nearly 95 per cent of the world production of commercial potash is derived from the soluble potash-salt deposits of Germany and France. The estimates of German potash reserves vary from 22,000,000,000 to 3,840,000,000,000 short tons of crude salts. The French reserves are estimated at approximately 1,600,000,000 short tons. The recently discovered deep deposits in Texas and New Mexico were believed by competent geologists and engineers to contain many millions of tons of soluble potash salts. They were being extensively prospected by drilling, with a view to developing a source of supply which, with potash derived from Searles Lake and other sources of brine, should render the United States less dependent upon the present Franco-German monopoly.

The Department of the Interior announced in June further discoveries of substantial bodies of potash salts in Texas. The most promising of these was in Ector County, where two beds with a combined thickness of 6 feet 7 inches were encountered a little more than 1900 feet down. In this connection interest likewise attaches to the discovery of potash at Gautreau in New Brunswick which the Federal Department of Mines in Canada considers important. In sinking a well in search of oil, a bed of rock salt 485 feet thick was penetrated and samples embracing the complete salt strata separately tested all showed the presence of potash.

RADIUM. The use of a modified nitric acid method for the recovery of radium from carnotite tailings from which the vanadium has been extracted is suggested in its Serial No. 2873 by the United States Bureau of Mines to prevent the loss of the radium content being wasted in present practice. In this publication issued in June it says:

Present methods of extracting vanadium from carnotite leave the radium as a fine precipitate in the tailings. The water used to flush these tailings away from the plant and the subsequent weathering may easily disperse the radium-bearing slime beyond possibility of recovery; if, however, the tailings are delimed and the slimes dewatered and stored, then the radium will be saved in a concentrated condition suitable for subsequent refining; this can be done at a cost which is an insignificant fraction of the former, and probable future, value of such a concentrate. There is also a limited market for such material in the manufacture of so-called medicinal radio-active preparations, which, though reported of doubtful therapeutic value, might better be made from a discarded tailing than from a virgin ore having a still lower radium content.

A new explosive of which radium is an important ingredient was reported in May from the California Institute of Technology in Pasadena, Calif., to have shown itself to be 30 per cent more powerful than TNT and 15 per cent more effective than commercial dynamite, in official tests. The explosive, which was invented by Capt. H. R. Zimmer of Los Angeles, was

tried out by Lieut.-Col. L. M. Adams, Professor of Military Science. An ounce of each of the three explosives was placed in three separate lead jars, and their comparative power determined by measuring the expansions created by the explosions.

CAST IRON MADE IN AN ELECTRIC FURNACE. An investigation of the making of electric-furnace cast iron has been completed by the U. S. Bureau of Mines in its Northwest Experiment Station in Seattle, Wash., in cooperation with the College of Mines of the University of Washington. The investigation involved a year's operation of a jobbing foundry making miscellaneous gray-iron castings from steel scrap. The results show that electric-furnace cast iron is stronger, tougher, and more dense than cupola iron, and a higher recovery of metal in casting can be obtained as a result of higher pouring temperature. Cast-iron scrap of high sulphur content can be converted into high-grade cast iron, low in sulphur, either by melting directly in the electric furnace or by refining molten metal from the cupola. Large additions of steel scrap may be used if desirable, or steel scrap can be used entirely and synthetic cast iron made. Some of the advantages of the production of synthetic cast iron are that one electric furnace can be used to produce both iron and steel and can thereby be kept in operation during periods when it might otherwise be idle. By operating an electric furnace continuously, labor is kept usefully employed, the heat of the furnace is conserved, life of the refractories is extended, overhead charges are reduced, and a high load factor on the power lines is maintained. Therefore, even under conditions where production of synthetic iron would not of itself be economical, it might be profitable in conjunction with the making of steel, because of the possibility of reducing the cost of producing steel.

ALUMINA CEMENT. Blast furnace slag is now regarded as a satisfactory and economical raw material for making portland cement. An investigation on this subject by the U. S. Bureau of Mines at its North Central Experiment Station in Minneapolis was published as Serial No. 2869 in May. The bureau's experimental 6-ton blast furnace was operated on a charge of bauxite, limestone, iron ore, and cast-iron turnings. During a three weeks' test about 70 tons of high alumina slag were produced and there seemed little doubt as to the feasibility of operating a blast furnace on a charge of bauxite, limestone, and iron ore so as to produce a substantial amount of iron and a slag which falls within range of composition of alumina cements. The iron oxide in slag made in a blast furnace would differ from alumina cements made by simple fusion of raw materials because most of the iron in the bauxite would be reduced to the metallic state in the blast furnace and recovered under proper conditions as low-sulphur metal.

One subject of the experiment, conducted in cooperation with the Aluminum Company of America, was to determine whether the so-called Pedersen process can be applied to the blast furnace. This process consists of smelting a charge of bauxite, iron ore, and limestone and results in two products. One is a slag containing about 50 per cent of oxide of aluminum and is intended for use in manufacturing aluminum, and the other is iron low in sulphur. The successful beneficiation of high-silica bauxites,

a problem under investigation by the Bureau of Mines at its Southern Experiment Station, would make large tonnages of low-grade bauxite available for the manufacture of aluminum as well as alumina cement.

FLUE DUST. The U. S. Bureau of Mines made a study of flue dust, the results of which were published in June as their Serial No. 2871. Essentially detailed information is given concerning what is in smelting operations the finely divided material called "flue dust," which is carried by the moving gases from the roasters and furnaces, then partly settled and recovered in the flue system. The flue dust from copper smelters contains a high percentage of copper, usually some gold and silver, and occasionally other valuable metals. It is too valuable to throw away and in present practice is returned to the smelting furnaces for retreatment. A part of this material again passes out with the gases and forms a circulating dust load in the system. The dust that passes out of the stacks into the atmosphere is an important source of loss in copper smelting. Loss of values also occurs by dust being blown while in transit from the flues back to the furnace, and of course the greater the amount of rehandling the greater this loss. Dust carried in the gas currents causes corrosion of the roof arches in reverberatory furnaces. Returning flue dust to the furnace increases the quantity of suspended dust. Corrosion reduces the life of the arches and shortens the length of furnace campaigns; also the corrosion of arches limits the temperature at which a furnace may be operated. Every ton of material that must be retreated in the furnaces reduces correspondingly the amount of new ore or concentrates that could be smelted.

INDUSTRIAL ALCOHOL. Concerning this important chemical a recent report says:

Alcohol is necessary to any development of chemical industry. The remarkable progress of American chemical industry in the past two decades, output having increased in value more than 75 times, has likewise been facilitated by the growth of industrial alcohol output. Post-war developments in the automotive industry have been of enormous importance to alcohol production, and about one-half of the annual output is devoted to some phase of automobile manufacture or operation. Anti-freeze solution is the largest single use of alcohol, amounting to about 40,000,000 gallons a year. The automobile also has given impetus to alcohol production by reason of the increased use of nitrocellulose lacquer and artificial leather, for both of which alcohol is essential. Five years ago all automobiles were finished with varnish; now more than four-fifths of them are lacquered, and the percentage is growing constantly. Other employments for lacquer which have opened up, following its success as an automobile finish, include its use on furniture, in railroad cars, for interior decoration, on floor coverings, leather, and for other purposes. The post-war development of the manufacture of high-grade perfumes and pharmaceuticals in the United States, indirectly results from the expansion of the alcohol industry.

FUEL. A startling announcement was made at the International Conference on Bituminous Coal held in Pittsburgh, Pa., on November 23, by Dr. Walter Rittman who described a new process by means of which the waste petroleum left after all the gasoline obtainable by cracking has been extracted can be utilized. By heating and running this waste through pipe coils several thousand feet long each 400 tons of waste changes through vapor into 300 tons of oil that is recovered for manufacture of gasoline and into 100 tons of residue that is coal. This coal under analysis is found to be similar to other natural coals. The process differs from those previously

used on petroleum waste, which produced coke instead of coal. The handling of this coke requires considerable labor, but the new gasoline-coal apparatus runs cheaply because it is almost automatic. The coal runs out in such liquid form that it has even been pumped into coal cars, there to harden during transportation. The process is not a laboratory experiment but is already a paying commercial enterprise.

MOTOR FUEL. At a meeting of the American Institute of Chemical Engineers Dr. George G. Brown of the University of Michigan, who for two years had been devoting his time to experiments in the more efficient use of natural-gas gasoline, in a paper summarized the work done by the Natural Gasoline Association as follows:

The use of substantial proportions of natural-gas gasoline with the ordinary gasoline makes the motor start more easily in winter and has an anti-knock value. While most refiners have been blending some of this natural gasoline with their staple gasoline he thought that more could be used with benefit. Specific recommendations have been made concerning the starting and anti-knock values of natural gasoline in motor fuel. There are products in the natural-gas gasoline which, when blended with petroleum gasoline, will cut out the knock and make for quicker starting. The fuel also has peculiar advantages for aviation uses. At the Swampscott meeting of the American Chemical Society, Prof. T. E. Layng of the University of Illinois pointed out that formaldehyde and methanol are the starting points in the production of synthetic resins and plastics found in radio sets, automobiles, countless molded materials, and in many forms of art. Methanol is used in great quantities in many chemical industries and in the manufacture of dye stuffs, paint, and varnish. With alterations in the designs of internal combustion engines methanol may become important as a motor fuel. This new process should become a serious competitor of the German method of synthetically producing methanol or wood alcohol from hydrogen and carbon monoxide, largely on account of the large volumes of natural gas available in the oil fields in the United States.

An announcement with far-reaching possibilities was made at the Second International Conference on Bituminous Coal held in the Carnegie Institute of Technology in Pittsburgh, Pa., on November 9, by Dr. Carl Krauch, of the German Farbenindustrie Aktiengesellschaft concerning the manufacture of synthetic gasoline from coal. (See under *Synthetic Gasoline*, YEAR BOOK for 1927, p. 180.) Doctor Krauch described the commercial success in Germany in making synthetic gasoline from soft coal, and incidentally also making soap from coal. Coal gasoline may be changed in the making at will into the most diverse marketable products, such as kerosene, gas, oil, and lubricating oils, thus making it possible to adapt the process to the fluctuations of the market. If anti-knock gasoline is wanted, German chemists can control their method of transforming molecules of coal so that certain aromatic basic substances affecting knocks are properly synthesized. The result is to put into gasoline a molecular structure that slightly affects the rapidity of explosion. In 1928 there was at the Leuna plant an annual production of 70,000 tons of gasoline, of which 40,000 tons were obtained from coal. It was hoped to raise the production to 250,000 tons at the end of 1929. The gasoline produced found a ready market for the reason that in all essential properties it equaled a good gasoline obtained from crude oil in the ordinary way. Soap was produced because the dye trust found quantities of paraffin from liquid coal on its hands, with a paraffin market relatively small. Dr. Krauch learned how to overcome the difficulties of extracting from paraffin

fatty acids that make soap. One of these steps enabled the chemists to complete in a few hours processes which formerly required several days. These experiences have led to a belief that the German synthetic gasoline process is analogous to that used by nature deep in the earth to transform peat and coal under heat and hydrogen pressure into natural petroleum deposits.

SYNTHETIC SUGAR. In a wireless dispatch from Geneva came the announcement that Prof. Ame Pictet of Geneva University has discovered a process of producing artificial sugar by synthesis from several substances after years of experiments. His product possesses the qualities of and resembles and tastes like ordinary sugar, such as is obtained from sugar cane or beet root. Artificial sugar will probably never be placed on the commercial market owing to the cost of production. Saccharine is not employed in the process.

GLYCERINE. A newspaper notice reports the beginning of commercially extracting glycerine as a by-product in the distillation of ethyl alcohol. The process is said to make large-scale production of glycerine possible at a cost of only 25 per cent of the present supply which has been produced only as a by-product of soap making. The manufacture of explosives and of anti-freeze solutions for automobiles are the two chief industrial uses of glycerine.

PAPER. In March an announcement was made of the perfection of a process which would make commercially possible the manufacture of newspaper from gumwood and Southern pine, two of the most abundant and rapid growing of Southern woods. In the final tests, made by the Arthur D. Little Corporation, gumwood cut in Mississippi was ground in a Maine pulp mill, mixed with a small amount of Southern pine sulphate pulp, purchased from a Southern mill, and made into paper at a Maine mill. This paper was used by Boston and New Orleans newspapers in running off regular editions on their high speed presses and gave satisfactory results.

DURABLE CLOTH. The intricate processes of plant life which have mystified science for many years were partially solved by experiments at the University of California carried on by Professors O. L. Sponsler and W. H. Dore, which seemed to reveal the chemical changes which take place in the conversion of cotton fibre into mercerized silk. The tremendous strength of cellulose fibre, of which the glucose molecule is the essence, makes it a highly important agency in the hands of the manufacturer who has been able to employ it in many useful ways without knowing its chemical composition. This secret would provide mankind with the means of manufacturing products of a high degree of utilitarian value. One of the numerous possibilities which may result to the benefit of industry from this research was a cloth of a durability and strength comparable with a network of steel cable.

NECROLOGY. Conspicuous among American chemists who died during 1928 were Theodore William Richards who died in Cambridge, Mass., on April 2, who had received the Nobel Prize in 1915 for his great work on determining the atomic weights of elements; and Edgar Fahs Smith who died in Philadelphia, Pa., on May 3, and who was known as "the best beloved college professor in America." Both Richards and Smith were members of the National Acad-

emy of Sciences and past presidents of the American Chemical Society. Biographical notes will be found under the appropriate heads.

BIBLIOGRAPHY. Among the more important books on chemistry that were published during the year are the third part of volume iv of the *Handbuch der anorganischen chemie*, by Richard W. H. Abegg; volume vi of the fifth edition of Allen's *Commercial Organic Analysis*; volume xi of the fourth edition and the first supplement of Beilstein's *Handbuch der organischen chemie*; a second edition of *A Textbook of Organic Chemistry*, by Joseph S. Chamberlain; a third edition of *The Determination of Hydrogen Ions*, by William M. Clark; the fifth edition in three volumes of *Organic Chemistry for Advanced Students*, by Julius B. Cohen; part 1 of volume vi, parts 1 and 3 of volume vii, parts 1 and 2 of volume ix, and volume x of *A Text Book of Inorganic Chemistry*, by J. Newton Friend; volume i of the third edition of *Die ätherischen öle*, by E. Gildemeister; the fourth edition of the *Chemical Encyclopædia*, by Charles T. Kingzett; the eighth volume of *A Comprehensive Treatise on Inorganic and Theoretical Chemistry*, by Joseph W. Mellor; the fourth volume of *International Critical Tables*, issued by the National Research Council; the second volume of *Solubilities of Inorganic and Organic Compounds*, by Atherton Seidell; and the first volume of *A Chemical Patents Index of the United States, 1915-1924*, by Edward C. Worden.

CHESAPEAKE AND OHIO CANAL. ANNIVERSARY. See CELEBRATIONS.

CHESS. Dr. Alexander Alekhine of Paris, the world chess champion, exercising his prerogative, did not defend his title in 1928 but was expected in 1929 to face either José R. Capablanca, of Cuba, from whom he wrested the crown in 1927, or E. D. Bogoljubow, of Freiberg, Germany, both having issued challenges. Capablanca was the most active of the chess masters during 1928, taking part in three international tournaments. He won first place both at Budapest and Berlin and finished second at Bad Kissingen. Hungary captured first honors in the Olympic competitions, with the United States second. Seventeen countries participated. The best individual showing was made by I. Kashdan of the Manhattan Chess Club, New York City, who accumulated 13 points in 15 games for a percentage of 86.66. The amateur Olympic honors went to Dr. Max Euwe of Amsterdam, Holland.

Abraham Kupchik won the second annual tournament of the National Chess Federation held at Bradley Beach, N. J. The Manhattan Chess Club captured the championship of the Metropolitan Chess League for the third year in succession. Harvard was the victor in the H. Y. P. W. College Chess League, while New York University triumphed in the Intercollegiate Chess League.

CHICAGO. See ILLINOIS.

CHICAGO SANITARY DISTRICT; CHICAGO DRAINAGE CANAL, ETC. See CANALS; SEWERAGE AND SEWAGE DISPOSAL.

CHICAGO, UNIVERSITY OF. An institution of higher education situated on the Midway Plaisance of the Chicago South Park System, Chicago, Ill., founded in 1890, largely through gifts of John D. Rockefeller. The University, with its affiliated institutions, occupies for educational purposes, over 65 buildings and 196 acres of land, including the site of the Yerkes Observatory at Williams Bay, Wisconsin. The net total regis-

tration for the autumn quarter of 1928, exclusive of the home-study department, was 8108, distributed as follows: Graduate school of arts, literature, and science, 1425; under-graduate school of arts, literature, and science, 2855; divinity school, 297; medical courses, 203; Rush Medical College, 304; law school, 376; college of education, 65; school of commerce and administration, 239; graduate school of social service administration, 130; graduate school of library science, 10; and university college, 2528. The summer quarter enrollment for 1928 was 6342. For the year 1927-28 there were 755 faculty members above the rank of assistant.

The total productive endowment of the University as of June 30, 1928, was approximately \$43,400,000, and its total resources, including funds held as agent and funds held temporarily, were in excess of \$77,800,000. The library contained approximately 800,000 bound volumes and about 400,000 unbound volumes and pamphlets.

Among the larger gifts received during the fiscal year ending July, 1928, were the following: From Julius Rosenwald, \$250,000 for the use of the departments of physics, mathematics, and astronomy; also \$250,000 to be subscribed by the University to the building fund of the Chicago Lying-in Hospital and Dispensary for the purposes of assisting the hospital to carry out the obligations assumed by it under the terms of a contract in which the Hospital agreed to construct a new hospital building or buildings near the university. Mr. Rosenwald also gave \$5000 in memory of Dr. Thomas Wakefield Goodspeed, the income to be used for incidental expenses of the department of the New Testament. From Max Epstein the university received \$100,000 for the building fund of the Chicago Lying-in Hospital and Dispensary for the purpose of establishing within the building or buildings an out-patient department of the hospital near the university. Bernard A. Eckhart subscribed a sum to be applied toward the cost of erecting and equipping a building for the use of the departments of physics, mathematics, and astronomy; Bernard E. Sunny gave a sum to be added to that which he had previously given to the university, the total to be used for the construction of a gymnasium for the laboratory schools of the school of education. The university received from Robert Law, Jr., an increased subscription to the Development Fund of from \$80,000 to \$200,000, the total to be used as endowment of a Distinguished Service Professorship. From Mr. and Mrs. Albert D. Lasker came a gift of \$1,000,000 as endowment of a programme for medical research into the causes, nature, prevention, and cure of degenerative diseases common to middle age.

Grants were also received from 12 separate sources for the promotion of research projects, totaling \$62,140. John D. Rockefeller, Jr., made a pledge of \$15,000 a year for five years for the expenses of the Oriental Institute and James A. and Henry J. Patten contributed \$5500 for its work. Mr. and Mrs. William J. Chalmers established a trust fund of \$15,000 for a memorial to be known as the "Frank Billings Fellowship in Medicine from William J. Chalmers and Joan Chalmers." A pledge of \$50,000 was received for the purpose of establishing the Leila Houghteling Fellowship and Scholarship Fund in the school of social service administration. Friends of the late Louise Roth pledged the

sum of \$4000 for an undergraduate scholarship in her memory. Among the bequests received by the University were the following: Anna L. Van Benschoten, \$2000; Edward L. Ryerson, \$50,000; Andrew MacLeish, \$10,000; and Charles H. Viol, \$5000. The following gifts were received for the purposes of general endowment: J. J. Dau, \$50,000, and Edward F. Swift, \$25,000. Up to July 1, 1928, the University had received contributions totaling \$401,923 to the Frank Billings Medical Endowment Fund, which it aims to raise to \$1,000,000. For the promotion of welfare work among foreign students the total sum of \$20,250 was received. A pledge was received from Harold F. McCormick to pay \$5,000 per year for three years toward the support of the school of social service administration, and Mrs. Anita M. Blaine pledged \$500 a year for three years for the same purpose. August F. Peabody and Charles P. Bullen each gave \$5000 toward the support of research in the humanities.

Buildings under construction during the year 1927-28 involved the expenditure of about \$2,500,000, most of which was devoted to completing buildings begun in the year 1926-27. Progress was made during 1928 on the George Herbert Jones Chemical Laboratory, the final cost of which was estimated at \$704,000; construction of a new power plant was started, estimated to cost about \$1,260,000, when completed; and ground was broken for the social science building and the Bobs Roberts Memorial Hospital for Children. The estimated cost of the social science building was \$665,000 and of the Bobs Roberts Memorial Hospital for Children, \$500,000. Plans were formulated for the construction of the following buildings: Bernard E. Sunny Gymnasium, estimated cost, \$500,000; the Nancy Adele McElwee Memorial Hospital, estimated cost \$300,000; the Gertrude Dunn Hicks Hospital, \$300,000; Bernard E. Eckhart Laboratory for physics and mathematics, estimated cost, \$700,000; and the botany laboratory and green houses, about \$300,000. Acting president of the university, Frederic Woodward, A.M.

CHILD LABOR. While only 10 State legislatures in the United States met during 1928, legislation favorable to children in industry was passed in all but three. The act passed by Congress amending extensively the *District of Columbia* child labor code is reviewed below. In *New York* the administrative machinery attending compulsory school attendance and the issuance of employment certificates was simplified. Attendance in continuation school was fixed at the age of 17 instead of 18 as heretofore.

Rhode Island's legislature added the following provisions to the State's child labor law: hours for work for persons under 16 were reduced to 9 hours a day and 48 hours a week; night work was prohibited after 7 P.M.; the street trades law was made to apply to the children of Pawtucket and Woonsocket as well as to Providence. *New Jersey* raised the educational requirement for work permits from the completion of the fifth grade to the sixth. It is interesting to note in this connection that only 22 States in 1928 had a requirement of less than the completion of the sixth grade. In *Kentucky* a law was passed strengthening the enforcement provisions of the compulsory school attendance law. The two houses of the *South Carolina* Legislature passed

laws extending compulsory school attendance to the ages of 7 to 14; increased the period of attendance to the full term of six months; raised the penalties for violation and passed an appropriation measure for the payment of salaries for attendance officers. However, the poverty exemption was lowered from 12 years to 10 years. The governor vetoed the appropriation bill and delayed approving the remainder.

In *Virginia* a school code was adopted raising the period of compulsory school attendance to the ages 7 to 15. Enforcement of the law was placed in the hands of juvenile and domestic relations courts where they existed, and all those children not attending school might be proceeded against as neglected children. In *Louisiana* and *Mississippi* no legislation was enacted; while in *Massachusetts* there was killed in the lower house a bill calling for the raising from 14 to 16 years of the entrance age into factories, mercantile establishments, etc., and the fixing of 18 years for the entrance age into certain dangerous occupations. The bill was defeated largely because it made no provision for vacation work, etc.

It may be well at this point, before proceeding to the more specific notes, to point out generally the status of child labor in the United States in 1928. Every State in the Union had fixed 14 years as the minimum age for entrance into industry. In 30 States a child must have completed if it is under 16, at least the sixth grade; in 20 the full elementary course is set as the minimum. Almost all States prohibit night work; four States set a 44-hour week for children, most fix the hours of work per week at 48, but two States allow a 60-hour week.

Quantitatively, there had been a drop in the number of children gainfully employed in non-agricultural activities. In 1900, 686,213 children between the ages of 10 and 16 were being employed or 7.1 per cent of all the children in this age group; in 1920, the figure was 413,549 or 3.3 per cent of all the children in the age group 10 to 16.

ACCIDENTS TO CHILDREN. The *Ohio* State Industrial Commission for the first time in 1928, under the powers granted it by the 1924 State constitutional amendment, placed penalties on an employer because a minor working for him and illegally employed was the victim of an accident. The *Illinois* Bureau of Labor Statistics published an important analysis of the records of 1803 children who had met with accidents while employed prior to the passage of the State's amendment to the workmen's compensation act affecting the status of children illegally employed (1927). A follow-up of these cases indicated that in only five instances had settlements been made under damage suits. The report points out that such cases had been exempted from the workmen's compensation act in order to expose employers to suits at law, with possible heavier penalties.

CALIFORNIA. By order of the Department of Industrial Relations, children under the age of 16 were excluded from work in the following occupations: all trades where they might come into proximity to moving machinery; building and construction; delivering goods from motor vehicles. The order was based on the fact that in the fiscal year ending June 30, 1927, 402 accidents had happened to children under 16, of which 7 had proved fatal, 8 had caused permanent partial disability, and 387 had caused

temporary disability. In the same period a total of 1713 accidents had occurred to children under 18 years.

WISCONSIN. By Wisconsin law, illegal employment for minors is due to the hiring of children under the age of 17 without permit or their employment in an enumerated list of hazardous industries. In the event of accident to minors thus illegally employed without permit, double compensation is levied on the employer; the compensation is treble when the accident is suffered in a prohibited industry. The employer himself must pay the extra compensation and cannot insure against the risk. Since 1923 (through 1927) there had been 324 cases in which extra compensation was paid. In 1927 two-thirds of these involved double compensation for accidents to children employed without the necessary permits. The figures are for the four years: 1923—69 cases, \$9782 normal indemnity, \$29,422 total indemnity paid; 1924—87 cases, \$15,214 normal indemnity, \$55,819 total indemnity paid; 1925—57 cases, \$5806 normal indemnity, \$17,402 total indemnity paid; 1926—66 cases, \$12,830 normal indemnity, \$35,273 total indemnity paid; 1927—45 cases, \$11,111 normal indemnity, \$27,223 total indemnity paid.

PENNSYLVANIA. This State, unlike Wisconsin for example, excludes from the benefits of its workmen's compensation acts all minors who have been illegally employed. A study made of the total number of minors under 18 who had been injured in 1927, showed that of the 4186 industrial accidents to these minors in 515 cases some form of illegal employment was indicated. Further inquiry elicited the fact that illegal employment had been the case in the accidents of 258, or 6 per cent of all the accidents reported for the year 1927. These were the disposition of the 258 cases: 97 were noncompensable because the loss of time was less than 10 days; in 146 cases compensation was paid by the insurance companies, though by law they were not compelled to do so; in 14 cases compensation was refused. Of the 14 involved in this last category, all but 4 were under 16 years of age. In the cases of four the injuries resulted in permanent disability. It is significant to note that whereas Wisconsin awarded double damages to minors illegally employed, in Pennsylvania 90 per cent of those injured received merely the compensation that would have been theirs had their employment been legal. There appears to have been no rule used for the refusal of compensation by the insurance companies in the number thus cited, or compensation appears to have been paid in a number of cases similar in every particular to those rejected. It is interesting to see that only one family refused the offer of an insurance company for a financial settlement.

DISTRICT OF COLUMBIA. The District of Columbia child labor law of 1908 was amended for the first time in the spring and the new bill received the approval of the President on May 29, 1928. Its chief provisions are the following: All children under 14 may not be employed in gainful occupations. Minors under 16 are prohibited from working in the following: industries where machines are operated, as an acrobat, gymnast, etc., in the stuffing of newspapers, as a beggar, street singer, or musician. Minors under 18 may not work at the following: operating

freight or passenger elevators, in a quarry or tunnel, in a tobacco warehouse or cigar factory. Girls under 18 may not work at the following: in a retail cigar store, in a hotel or for an apartment house, as an usher or an attendant in a theatre, as a messenger. The hours of work for minors under 18 may not be more than 48 hours a week nor more than 8 hours in any day. Night work is prohibited for girls under 18 and boys under 16 between 7 P.M. and 7 A.M.; for boys between 16 and 18, the prohibited hours are between 10 P.M. and 6 A.M. Work permits, to be distributed by the director of the department of school attendance to all children under 18, are to be granted when the following have been filed: a signed statement from the prospective employer as to the nature of the work, hours, etc., a certificate of age satisfactory to the director, a certificate of physical fitness if the minor is under 16, a school record for all children under 16 certifying to their ability to read and write English and to their completion of the eighth grade. Employers must secure work permits for all minors between the ages of 14 and 18 and return these to the department. Penalties of fines and imprisonment are established for employers and parents and guardians. The act provides for the appointment of inspectors and gives the juvenile court of the District jurisdiction in cases arising out of violation of the act. It is significant to note that the act does not provide for extra compensation penalties for employers in the cases of accidents to minors illegally employed.

SCHOOL ATTENDANCE IN INDIANA. A study made by the National Child Labor Committee of the workings of the school attendance law in nine cities in Indiana found general observance of the statute. In Indiana children under 14 who have not completed the eighth grade and who are not in possession of an employment certificate may not leave school for work. Only those 16 and over need not comply with the regulations. The study found that 82.3 per cent of the children between the ages of 14 and 17 inclusive were attending school while two-thirds of the children aged 16 and 17 (those not liable under the compulsory attendance law) were attending school. The report attributed this state of affairs to the following conditions: the law was a reasonable one; the law was being enforced by zealous officials; the parents were convinced that their children belonged in school until the age of 16; the excellence of the school system in the State. One of the problems being handled with intelligence is the situation of the backward child. Interestingly enough, the Committee did not find the child labor law being enforced with the same diligence that characterized the handling of the compulsory attendance law.

LABOR'S PROGRAMME. The YEAR BOOK has printed the programmes of American welfare organizations on the question of child labor and much space has been given to legislative enactments. There follows a manifesto adopted by a group of radical European organizations so that the American reader may be in a position to compare European labor's attitude with prevailing liberal sentiment in the United States. This programme was adopted early in the year by the International Federation of Trade Unions, Labor and Socialist International and the Socialist Youth International.

1. Prohibition of all wage-earning work for children up to the completion of the fourteenth year.
2. Compulsory attendance at an elementary school until admission to wage-earning work.
3. Introduction of compulsory instruction (vocational) until the completion of the eighteenth year.
4. The extension up to the completion of the eighteenth year of protective legislation applicable to apprentices and young workers (manual and non-manual).
5. Establishment of a maximum 48-hour week, to include vocational instruction and the time required for clearing up.
6. A free Saturday half-day and a free Sunday; if not Saturday, some other free half-day to be given during the week.
7. Prohibition of night work for young workers.
8. A minimum three weeks of paid holiday for wage-earning young persons under 16 (inclusive of apprentices), and two weeks' paid holiday for wage-earning young persons between 16 and 18 (inclusive of apprentices).
9. Regulations providing for the welfare, unemployment relief, and training of unemployed young workers.

See CHILD WELFARE below.

CHILD NUTRITION. See FOOD AND NUTRITION.

CHILD WELFARE. During the year the list of States carrying mothers' assistance acts on their statute books was increased to 44 by the addition of Kentucky and Mississippi. The Kentucky law authorized the counties of the State to make the necessary allowances, set up a children's bureau and appropriated \$5000 for the latter's upkeep. The Mississippi law, too, authorized the use of county funds for the support of mothers with dependent children, empowered the chancery court to order the payment of these funds and placed under the supervision of the court the investigations of applications for assistance and the necessary follow-up. As a result of this action, the only States that did not provide measures for the assistance of mothers were Alabama, Georgia, New Mexico, and South Carolina. In Georgia, mothers' aids grants were being made by private philanthropic agencies. The Tuttle-Newton Home of Augusta had 71 children under supervision in their own homes; the Hebrew Orphans' Home of Atlanta used the same method and in one month accepted only a single child for institutional care as against 32 for placement in their own homes; the Masonic Orphans' Home of Macon, a recent convert to this method, cared for 34 children of 12 families in their own homes. The field worker of this last institution reported that the cost of children in their own homes was \$5.80 monthly as against a monthly average of \$23.79 for institutional care. Miss Emma O. Lundberg of the Federal Children's Bureau was authority for the statement that at any one time there were as many as 200,000 children being assisted in their own homes as a result of mothers' assistance acts.

New York City was found to be spending \$5,150,436 annually on this work. The number of families receiving aid in New York City on Jan. 1, 1927 was 9907 and the number of children thus taken care of was 26,096. New York State was spending annually \$6,396,307 to keep 34,156 children with their own families. The number of families thus preserved was 12,538. Outside of New York City, mothers' aid is administered by the counties. Erie County, in which the city of Buffalo is located, spent \$265,389 on the care of 414 families with 1357 children. The same report (by the Children's Bureau) pointed out that there were as many as 400,000 dependent children in the country, and that the easiest and most successful method

devised for their care was their retention in their own homes with a sufficient subsidy, however, to permit the maintenance of an adequate standard of living. An inquiry made in 1918 among 12,000 families in 100 cities established the fact that a mother with three dependent children needed \$1000 annually. The Children's Bureau found, however, that this standard was possible in only a few of the States. For example, in 35 States at the beginning of 1928 the maximum expenditure permitted was about \$800 annually and in 20 of the States the sum allowed for the same family unit, i.e., a mother and three children, was \$480.

In another study made by the same authority of the effects of mothers' aid acts, it was found that such assistance rather than breeding a sense of dependency had the contrary result. The places surveyed included the cities of Chicago, Pittsburgh, Detroit, Buffalo, Cincinnati, Seattle, San Francisco, Reading, Pa., New Bedford, Mass., and the city of Winnipeg in Manitoba, Canada. The average monthly grant per family in the 10 localities ranged from a minimum of \$20 a month in Seattle to a maximum of \$51.81 in Buffalo and \$57.40 in Manitoba, Canada. Five of the agencies provided for physical examinations for the children under care though mental examinations were not given the weight needed by public child-care workers. All the 10 agencies paid particular attention to the observance of school-attendance and child-labor laws, and most of the agencies were interested in obtaining further education for children of unusual ability. In five of the ten agencies intensive case work was being attempted. The reports' observations on this point are worth recording: "Even in communities where all-around intensive social case work was not attempted, the regularity of financial aid and its continuance over a period of years, together with such friendly service as was given, fostered an *esprit de corps*, a sense of security and stability, and tended to develop and maintain in a large number of families a high degree of personal efficiency and a capacity to organize their own normal activities on a par with those of the self-supporting families in their communities."

INFANT MORTALITY. During the year 1927 the infant mortality rate in the United States was the lowest on record. For the 683 cities in the birth-registration area the rate was 64.9 per 1000 live births as compared with the 1926 rate of 73.7. Among the cities of over a quarter of a million population Seattle had the lowest rate with 41 deaths and New Orleans had the highest with 88. The combined rate for the cities of a population of a quarter of a million or more was 63.1, while that for the smallest cities, ranging between 10,000 and 25,000 population, was 68.2. Against the ever-declining infant mortality rate was to be placed the stationary maternity mortality rate. For example, a study of maternal deaths in New York State for the periods 1916-20 and 1920-25 shows no decrease in the death rate from puerperal causes. The fact is, in New York City the rate had increased 2 per cent over the later period. Similarly, the figures for still births showed little changes in the two five-year periods. An interesting fact brought out by the study was that the risk of a still-birth was directly related to the total number of children born to the mother, being least for a second child and increasing with each

birth to a maximum among mothers with 12 or more children.

ACCIDENTS. The National Safety Council, in a study published of the fatal accidents that occurred in 1925, revealed that nearly 22 per cent of the more than 90,000 accidents had befallen children 14 years of age and under; and that half of these had taken place in the case of children under 5 years. In the age group under 5 years the most important cause of death had been burns; in the group 5-9 years the most important causes had been automobile accidents and burns; in the age group 10-15 the leading cause was wounds from firearms (15 per cent of the total in this group).

JUVENILE DELINQUENCY. During the year the Chicago police made an interesting and original attempt to cope with juvenile delinquency through the establishment of employment bureaus for boys in the city hall and the local police stations. The theory underlying the creation of these exchanges was that boys employed in interesting jobs will keep out of mischief. The offices were first opened in September, 1927, and from then until the end of the year 5398 applications had been received and a total of 2779 boys had been placed. A follow-up system is part of the bureau and dismissals of boys are investigated.

RECREATION. A survey, made in 1927 and published in February of this year, of recreational activities and facilities for boys in Newark, N. J., showed plainly the need for a wholesale increase in facilities as well as an integrated programme for the guidance of such activities. The study was based upon data furnished by 27,586 boys between the ages of 8 and 17. The completeness of the survey is indicated by the fact that the boys examined included 85 per cent of the total registrants in the age groups employed in the public schools, and 50 per cent of those in the parochial schools. The following chief findings are of significance: the great majority of the boys sought their recreation on the city streets; only 20 per cent of the boys had any affiliation with a church or club conducted by a social agency; one boy out of every nine belonged to a street gang; moving picture theatres furnished the leading commercial amusement. Among the recommendations carried by the report were requests for the extension of continuation schools to include boys of 14 and 15 years, vocational guidance and better opportunities for recreation. The survey was conducted under the auspices of the Newark Rotary Club.

FAMILY ALLOWANCES. Mention has been made in previous YEAR BOOKS of the family endowments being granted to industrial workers on the basis of the number of children being supported. It has been pointed out that the Australian states and France have been the leaders in legislation of this type. Belgium in April, 1928, enacted a law making it compulsory for all contractors performing work for the state, the provinces, or the communes to contribute to a compensation fund for the same purpose. Under the provisions of the compensation fund all children under 14 are to receive allowances, 15 francs being paid monthly to the first child, 20 francs to the second child, 40 francs to the third child, and 80 francs for each subsequent child. In France, such allowance funds have been in operation for eight years and there exists a

general congress which meets annually to report on the progress of the funds. At the congress held in May it was disclosed that there were in existence in the country 218 funds representing 20,000 different establishments and employing 1,500,000 workers. Over the year 1927 these funds distributed in family allowances 260,000,000 francs. If governmental offices and private industries having their own systems are to be included, the total amount distributed was 1,475,000,000 francs among 3,862,000 persons.

FOREIGN NOTES. In January it was reported that the Governor of the State of Puebla, *Mexico*, had ordered the drafting of legislation providing for the creation of juvenile courts in the State. The judge, when appointed, was to be assisted by two teachers, who were to be normal-school graduates, as well as a physician. In Mexico City such a juvenile court had been in operation for upward of a year. In Jerusalem, *Palestine*, an ordinance was enacted forbidding the employment of women and children in the following industries: where the use of white lead is imperative, and making of mirrors, and the manufacture of asphalt and bitumen. *Portugal* was reported to have radically amended its labor code with respect to the employment of women and children in industry. No boy under 16 nor girl under 18 may obtain employment without a physician's certificate and proof of ability to read and write. The minimum age is fixed at 12, children between 12 and 14 may not work more than 6 hours daily, while a working day of 7 hours is fixed for children between 14 and 16. Children under 16 and women may not be employed in work underground or at night work. Employment during the first four weeks after confinement is prohibited; shops employing more than 50 women are to furnish day-nursery facilities. No reduction of wages may be made because of necessity for conforming with the law. *Chile* by a recent decree made school attendance compulsory from the ages of 7 to 15. Previously attendance at school had been required for a minimum of four years only. Among other sections of the decree were to be found the following: All schools, wherever possible, are to be equipped with gardens, workshops, playgrounds, gymnasiums, baths, and libraries; dependent and handicapped children are to be housed in institutions of the cottage type; factories are forbidden to employ children of school age while schools are in session; penalties are provided for parents who fail to send their children to school in conformity with the law.

An interesting form of children's activity has appeared in *Germany* in the mass "hike" in which large numbers participate. The sport has become an organized activity with permanent associations, overnight shelters, programmes, etc. At the end of 1926 there were 2300 shelters scattered throughout Germany for the purpose of taking care of these young *Wandervoegel* or wandering birds. In 1926 a total of 2,100,000 hikers was accommodated. The parent association, the German Association for Shelters for Young People, reported the existence of 900 district groups. For Fifth Pan American Child Welfare Congress see PAN AMERICANISM.

CHILE, ché'la. A South American republic lying on the western Pacific coast of the southern part of the continent, extending from Peru to the southernmost point. Capital, Santiago.

AREA AND POPULATION. The extreme length of Chile is 2628 miles and the average width is 177 miles; area 290,084 square miles. At the census of 1920 the population was 3,753,799. The republic is divided into 23 provinces, subdivided into 82 departments and one territory (Magallanes). The populations of the principal cities, according to the census of 1920 with 1927 estimates in parentheses were: Santiago, 507,296 (587,875); Valparaíso, 182,242 (191,750); Concepción, 64,074 (68,155); Antofagasta, 51,531 (60,331); Iquique, 37,421 (36,200); Talca, 36,079 (35,152). The urban population made up 46.6 per cent of the total. The great majority of the population is of European descent. In 1920 the foreigners numbered 115,763, as against 134,524 in 1917. The natives comprise the Fuegians, for the most part nomadic and living in the southern territories; the Changos, civilized and employed as laborers, in the coast region; and the Araucans, who live in the valleys and on the western slopes of the Andes and number about 101,118. The movement of population in 1926 was: Births, 159,540; deaths, 108,223; marriages, 30,314. The population was estimated in 1928 at 4,024,938. Immigration is small but is encouraged by the Government.

EDUCATION. Primary instruction is free and compulsory. According to the latest available statistics there were 3357 public schools with 438,781 pupils and 9414 teachers. There were also 459 private primary schools with 1430 teachers and 62,099 pupils; 15 public normal schools with 2507 pupils and 453 teachers; 96 public and 102 private secondary schools with 40,084 and 20,536 pupils and 2038 and 1247 teachers, respectively; 11 public commercial schools with 181 teachers and 3133 pupils. There are various schools of mines, professional schools, and other special institutions. For higher education there are the University of Chile belonging to the State, the Catholic University, and two industrial universities, situated at Valparaíso and Concepción. Other noteworthy institutions are the Pedagogical Institute, the National Conservatory of Music, the National Observatory, etc. There are in addition various lyceums and colleges maintained in the provinces.

PRODUCTION, MINERALS, ETC. Although agricultural activities are of vital importance to a considerable part of the Chilean population, in surveying the economic structure of Chile as a world market, it is the mineral resources which are of major interest, accounting for the greater part of its exports as well as furnishing the funds for most of its imports. Prior to and during the World War, Chile enjoyed an unassailable economic position because of its monopoly of natural nitrates, used principally as fertilizer and in the making of munitions, as well as because of the high war-time prices prevailing for copper. Prices of nitrate, together with those for iodine, a by-product of the nitrate industry, were fixed by an international association of nitrate producers, this policy being followed until April, 1927, when free sales were adopted. This step was necessitated by increasing competition from synthetic fertilizers, the production of which has been increasing steadily since the war. Free sales on a competitive basis have brought about some renewal of activity in the nitrate industry which suffered a serious depression during 1926. Although the manufacturing industries are being developed as rapidly as

possible in Chile with the encouragement of a strongly nationalistic government, the nitrate industry remains by far the most important in the economic life of the country.

The agricultural zone lies in the centre of the country, the climate permitting the raising of tropical products as well as those of the temperate zone. Cereals are the leading crops and wheat is the most important. The acreage and production in metric quintals of the principal crops in 1926-27 were as follows: Wheat, 1,459,104 acres, 19,675,142 quintals; barley, 134,138 acres, 2,265,028 quintals; oats, 94,440 acres, 1,201,652 quintals; maize, 56,798 acres, 880,736 quintals; beans, 91,977 acres, 1,211,740 quintals; peas, 25,322 acres, 233,548 quintals; potatoes, 67,020 acres, 323,177 tons; vines, 170,152 acres, 68,774,560 gallons of wine. The area planted in tobacco was 2221 hectares and the production, 4,152,000 kilos. Fruit growing has latterly increased and covers an area of approximately 20,000 hectares. On Jan. 1, 1926, the livestock comprised 323,581 horses, 27,364 asses, 40,187 mules, 1,918,433 cattle, 4,093,872 sheep, 357,033 goats, and 246,636 pigs. In 1927 there were 9093 industrial establishments and 58,714 commercial establishments.

Chile is very richly endowed with minerals, being the second largest producer of copper in the world. Other important minerals are gold, silver, cobalt, manganese, coal, nitrate, borate, salt, sulphur, and iron ore. As stated above the nitrate industry is the most important in Chile, although it has been slipping in recent years due to synthetic fertilizer manufactures. Some idea of the extent to which this industry has slipped may be gathered from the fact that in 1910, 64 per cent of the world's consumption of inorganic fertilizers was contributed by Chilean producers, whereas in 1926 they supplied only 25.7 per cent of the demand. The year 1927 opened with only 25 nitrate *oficinas* in operation, employing 22,847 men and producing 79,551 metric tons in January. The industry steadily increased its production during the year, and by June 30, 34 plants were operating, employing 31,119 workmen and producing 118,461 tons of nitrate during the month. By December, 1927, 62 plants, employing 54,286 men, were producing 233,848 metric tons. Thus the downward trends which prevailed during 1926, when plants were closing down uninterruptedly, were reversed during 1927, but, taking the year as a whole, production during 1927 amounted to 1,615,111 metric tons, a decrease from the previous year, when it totaled 2,016,000 tons. However, exports of nitrate, which in 1926 amounted to only 1,668,169 metric tons, increased to 2,375,441 tons in 1927, thereby lessening accumulated stocks, and, though the close of 1926 saw the nitrate industry at a low ebb, 1927 was a year of slow but steady recovery, with additional plants preparing to renew operations. The production in 1928 was 2,295,613 metric tons and the exportation 2,755,013 metric tons.

COMMERCE. The total value of exports in 1926, the last period for which full statistics were available, amounted to \$199,794,000. The principal exports were nitrate (1,668,000 metric tons valued at \$86,447,000); copper (187,23,000 kilos valued at \$22,968,000); and iodine (1,132,000 kilos valued at \$11,573,000). The imports were valued at \$156,155,000, of which 32.6 per cent came from the United States, 17.3 per

cent from the United Kingdom, 12.1 per cent from Germany, and 4.2 per cent from France. Preliminary figures for 1927 give imports of \$129,510,000 and exports of \$203,940,000.

Total exports from the United States to Chile were valued at \$37,888,715 in 1927 as against \$49,043,193 in 1926. However, in 1926 Chile purchased a number of items, such as locomotives and equipment used in the electrification of the Trans-Andean Railway, construction materials and plan equipment for a large American nitrate *oficina* using a new process, and equipment for a new copper smelter, which constitute capital expenditures and are an abnormal item in trade. United States exports to Chile in 1925 were only \$30,274,000. Hence the 1927 figures represent merely a \$2,000,000 decline from those of a normal year, and this drop may be attributed to unfavorable economic conditions during 1927.

United States imports from Chile, which consist principally of nitrate and copper, decreased from \$81,442,281 in 1926 to \$61,857,438 in 1927. Imports of sodium nitrate, the Chilean product, into the United States during 1927 amounted to only \$30,132,158, as compared with \$42,781,386 during the previous year. This decrease was largely attributed to the poor cotton year in the United States in 1926, which affected the import of fertilizers in 1927. Imports of refined copper from Chile declined from \$22,884,487 in 1926 to \$12,785,696 in 1927, although imports of unrefined copper in pigs and bars rose from \$4,170,341 in 1926 to \$7,523,510 in 1927. These two items alone very nearly account for the decline in imports from Chile in 1927.

FINANCE. The ordinary budget of Chile for 1928, as promulgated by the President on Jan. 5, 1928, calculates receipts and expenditures at 959,100,000 and 942,600,000 pesos, respectively, thus anticipating a surplus of 16,500,000 pesos. It was estimated that the income derived from the various sources would be as follows:

	Pesos
National properties	7,650,000
National services	99,078,860
Direct and indirect taxation:	
Imports	240,000,000
Exports of nitrate	219,000,000
Income	155,000,000
Other	161,300,000
Total	775,300,000
Various receipts	77,090,757
Total ordinary revenues	959,119,617

The estimates of income appeared to be conservative and might prove to be appreciably below that actually received. Expenditures authorized in the ordinary budget for 1928 were 12,900,000 pesos below the total authorized in the 1927 ordinary budget. Itemized expenditures to be made during 1928 were as follows:

	Pesos
Presidency of the Republic	861,240
Independent services:	
Comptroller general	2,000,000
Bureau of supplies of the State	400,000
Congress	6,751,082
Interior	120,497,743
Foreign relations	11,727,220
Treasury	34,182,397
Public education	130,003,072
Justice	28,550,855
War	106,160,000

	Pesos
Navy	102,958,424
Fomento	17,800,000
Social welfare	33,775,000

Total administrative expenditures .. 590,667,034

Service of public debt	231,753,773
General contributions and special funds ..	51,967,900
Social protection	66,300,000
Return of imposts and taxes	2,000,000

Total ordinary expenditures 942,688,707

In addition, an investment of 200,000,000 pesos during 1928, and a total of 1,575,000,000 within a period of six years, in the development and construction of public works was the ambitious programme of the Chilean Executive, according to the proposed extraordinary budget and plan for public works, submitted to Congress in the early part of January.

For the first time in its recent history of financing, a careful demarcation of revenues and expenditures was being attempted in an ordinary and extraordinary budget. Heretofore, in addition to the ordinary appropriations, extraordinary expenditures had been attended to by separate legislation, each law intended to create its own revenue for the sum to be expended. Frequently, however, exigencies had arisen which made necessary or advisable the setting aside of such moneys thus raised for purposes different from the original intention. The extraordinary budget for 1928 called for expenditures of 242,700,000 pesos for stated objects and 59,800,000 for such other items as may be found necessary or advisable during the course of the year. These expenditures of 302,500,000 pesos were to be met from borrowings.

COMMUNICATIONS. The total length of government-owned railways in Chile in 1927 was 4683 kilometers; capital expenditures, 862,963,000 pesos; receipts, 239,168,000 pesos; expenditures, 197,678,000 pesos; interest payments, 22,704,000 pesos. For the first half of 1928, the total income was 135,000,000 pesos and expenses and charges, 107,000,000 pesos. The total length of all railways in Chile in 1926 was 8620 kilometers. In the same year there were 23,373 kilometers of first-class highways, 16,910 kilometers of telegraph wire, 28,360 telephone instruments in use, and 11,780 automobiles registered (1927). The shipping entered at the ports of Chile in foreign trade in 1926 was 1100 vessels of 3,206,465 tons; cleared, 1044 vessels of 3,001,892 tons.

GOVERNMENT. According to the constitution of Oct. 18, 1925, legislative power is vested in the National Congress, consisting of a senate of 45 members and a house of representatives of 132 members. The executive power is vested in the president who is elected for six years, and who is not eligible to succeed himself. The president is assisted by a cabinet, which is responsible to him, and the members of which may speak in congress but may not vote. President in 1928, Col. Carlos Ibáñez. For Navy see NAVAL PROGRESS.

HISTORY. It was announced on Oct. 10, 1928, by the Secretary of State of the United States that in view of the resumption of diplomatic relations between Chile and Peru and the hopeful prospect that these two countries might be able to settle the long-standing Tacna-Arica dispute which, if settled, would make unnecessary further work of the boundary commission, the two

governments had agreed to suspend the work of the boundary commission for a period of four months in order to give time to permit negotiations between the governments for a settlement. Both governments agreed to accept such a proposal. For a discussion of the Tacna-Arica dispute, see article *ARBITRATION, INTERNATIONAL*.

The government of Col. Carlos Ibáñez passed through a comparatively calm and quiet year. From time to time there were rumors of revolt against his stern methods, but not one of these rumors materialized into any movement threatening his rule. He stated time and again that there was to be no return to the old methods of government that had been in existence before his régime and that any person suspected of being disloyal to his government would be ruthlessly punished, particularly if such persons held government positions.

Among the various laws enacted or decreed during the year the following might be mentioned: *Tariff law*—A new tariff law, which changed considerably the old rates of import duties, was published on February 27 and went into effect on April 27, except for those items in which there is a reduction in the tax or for those items previously free and now taxed. *Land titles*—A law was passed to regulate the land titles in the south. These lands which were originally held by the Indians or by the State, were in many cases settled long ago without legal titles, having passed since through many hands. The lack of perfect titles had impeded the development of this region, because the holders of the land encountered difficulties in getting mortgage credit. *Government bonds*—All government bonds were exempted from income taxes. They were to be received at par by the National Government for any guarantees. *Insurance department*—An insurance department was created for the supervision of insurance companies doing business in the country and also to provide reinsurance for excess risks. *Industrial Credit Institute*—The establishment of this institute was authorized to aid local industries with loans for longer periods than would be obtained from commercial banks. Mortgages on machinery and other fixtures while in possession of the mortgagee were also authorized. *Agricultural credit*—A revised text of a law on agricultural credit, combining all legislation on this subject, was promulgated by the Minister of Promotion on Mar. 22, 1928. *Institute of School Health*—A decree creating the Institute of School Health was signed by the President on Mar. 23, 1928. Its purpose was to direct the psychological and biological development of the child during its school years. The institute was to have two sections. One was to be devoted to training teachers in those phases of school health under their jurisdiction, to educating school nurses, and to giving special courses in physical education. The other section was to be that of school hygiene, as concerned with the pupils. *Settlement of government lands*—A decree opened to settlement by Chileans now living in other countries about 350,000 hectares of government lands not far from Puerto Montt. See also *EARTHQUAKES*.

CHINA. A Far-Eastern state forming the eastern part of Asia, on the Pacific Ocean, under a republican form of government after Feb. 2, 1912.

AREA AND POPULATION. China comprises 18 provinces, the so-called dominion of Sinkiang,

the dependencies of Manchuria, Fengtien, Kirin, and Heilungkiang, and the regions over which only nominal authority exists, viz., Mongolia and Tibet. Since China has not yet carried out a proper land survey or census, the area and population of its territory can be given only as estimates, as in the following table (figures for certain other countries are added for purposes of comparison):

Regions	Area in square miles	Population	
		Total	Density per square mile
China proper, including the three Manchurian Provinces	1,897,000	436,000,000	238
Mongolia	1,370,000	2,500,000	2
Chinese Turkestan ..	550,000	1,200,000	2
Tibet	465,000	6,500,000	14
Total, Chinese territory ...	4,282,000	446,200,000	104
South America ...	6,850,000	60,000,000	8
United States, exclusive of dependencies	3,620,000	110,000,000	30
Japanese Empire ..	260,000	80,000,000	307
France (continental)	207,000	40,000,000	150

The population of the Great Yangtze Basin is estimated at 200,000,000. The Yangtze Delta, comprising an area of 50,000 square miles, or about that of the State of Illinois, has an estimated population of 40,000,000. Two-thirds of China's population is concentrated in one-third of its area, being densest along rivers and in coastal regions. Mongolia, Turkestan, and the three Manchurian Provinces offer vast areas of fertile lands for settlement and mineral resources for development, but lack of adequate means of transportation and protection against brigandage have discouraged settlement of these sections. The accompanying table gives certain essential data concerning the area and population of the Provinces of China:

POPULATION AND AREA OF CHINA BY PROVINCES

Province	Area in square miles	Population according to Chinese Post Office estimate, 1922	Capital of Province
Anhui	54,826	19,850,000	Anking
Chekiang ...	36,680	22,000,000	Hangchow
Chihli	115,830	34,200,000	Paoiatingfu
Fukien	46,332	13,200,000	Foochow
Honan	67,954	30,850,000	Kaifeng
Hunan	83,398	28,450,000	Changsha
Hupeh	71,428	27,150,000	Wuchang
Kansu	125,483	6,000,000	Lanchowfu
Kiangsi	69,498	24,500,000	Nanchang
Kiangsu	38,610	33,800,000	Nanking
Kwangsi	77,220	12,350,000	Kweilin
Kwangtung ...	100,000	37,150,000	Canton
Kweichow ...	67,182	11,100,000	Kweiyang
Shansi	81,853	11,000,000	Taiyuanfu
Shantung ...	55,984	30,800,000	Tsinan
Shensi	75,290	9,450,000	Sianfu
Szechwan ...	218,533	49,800,000	Chengtu
Yunnan	146,714	9,850,000	Yunnanfu
Shengking (Manchuria)	363,700	22,100,000	Mukden
Kirin (Manchuria)			Kirin
Heilungkiang (Manchuria)			Tsitsihar
Total	1,896,515	433,500,000	
Sinkiang ...	550,000	2,500,000	Urga
Mongolia ...	1,370,000	2,500,000	Lhasa
Tibet (Chinese estimate) ..	465,000	6,500,000	
Grand total	4,282,000	445,000,000	

The figures pertaining to area and population as given in the foregoing table are taken from the Chinese Post Office estimates of 1922. Where these figures are given otherwise in this book, the reader is at liberty to make his own choice—for China up to the end of the year 1928 had taken no official census.

There are similar divergences in the estimates of the population of the cities. According to the Government estimate of 1921, the population of Peking and its suburbs was about 1,300,000. Another estimate places it at 924,334, including 4000 foreigners. The estimates for the chief Chinese ports in 1925 given out by the Chinese Maritime Customs were as follows: Shanghai, 1,500,000; Hankow, 1,646,800; Canton, 900,000; Hangchow, 340,200; Changsha, 535,800; and Soochow, 500,000. The total number of foreigners and foreign residents in China in 1926 according to the Chinese Customs authorities was 346,883, of whom 235,339 were Japanese, Russians, 74,089, British, 14,670, Americans, 9401, Portuguese, 3296, Germans, 2963, and French, 2270. The treaty powers in China down to the beginning of 1928 were as follows: Russia, Great Britain, United States, France, Norway, Sweden, Denmark, Netherlands, Spain, Belgium, Italy, Peru, Brazil, Portugal, Japan, Mexico, Chile, Switzerland, Bolivia, Persia, and Germany. Of these powers, it was stated that Germany, Bolivia, Persia, and Chile had renounced the consular power.

EDUCATION. Education throughout China in 1928 was in a state of flux. Wherever possible, the Nanking government was reorganizing the educational system on the French model. If their plans were carried out, all academic and administrative work would be centralized directly in national and local educational institutions. The country was to be divided into university districts and in each district there was to be one government university, which, being the highest educational unit in the district, would take over administration. Above these districts there would be a national university, the highest educational organization in the entire country. The functions of a ministry of education, according to the plans, were vested in the National University.

In the China before the Nationalist movement there were two kinds of primary schools, the higher and the lower. The former were established by the district governments and were intended as intermediate schools between the lower primary schools and the middle schools. According to the latest available statistics the total number was 10,236 with 582,579 pupils. At the same time there were 167,076 lower primary schools with 5,814,375 pupils. At the beginning of 1928 there were 10 government universities, although their status and operations were rather shadowy because of the internal conditions of the country. Tsing Hua College, a special institution, was established near Peking, to prepare students for education in the United States, under the agreement on the part of the United States to return the Boxer indemnity for that purpose. There is a modern university for Chinese under British direction at Hong Kong which is attended by students from many parts of China.

The three forms of native religion are Confucianism, Buddhism, and Taoism. Besides these there are Mohammedans in all the provinces. The

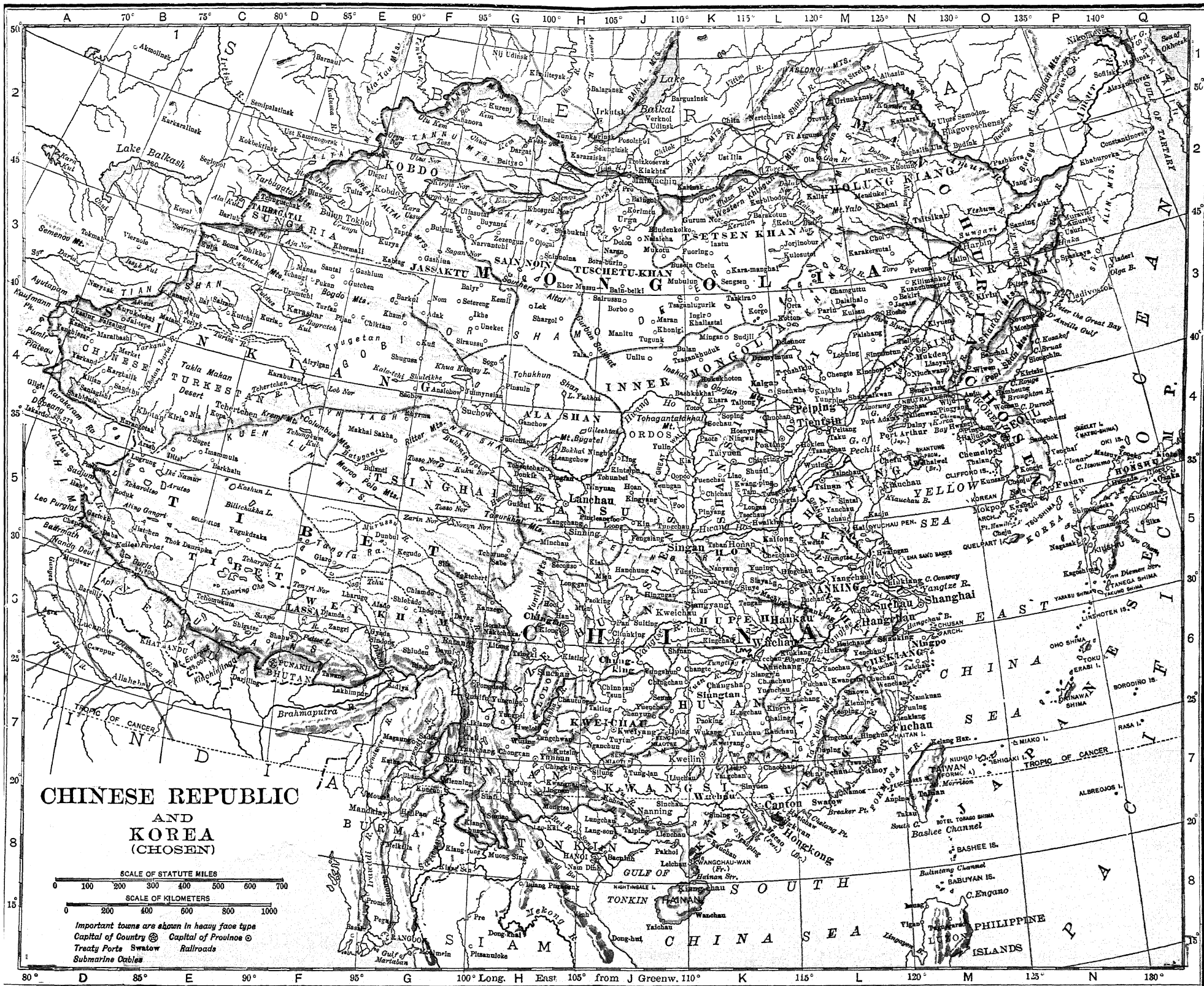
Roman Catholic Church at the end of 1923 maintained 57 bishops, 1481 European priests, and the native Roman Catholics numbered 2,208,800. The Protestant missions in 1920 had 6636 engaged in their service and the Chinese Protestants numbered 618,601. Attached to the Protestant missions were 27 colleges of university standing, 256 middle schools, and 581 higher elementary schools.

PRODUCTION, ETC. China is essentially an agricultural country. It has been estimated that the total arable land in the country amounts to 192,060 square miles. The holdings are generally small and the methods of the most primitive kind. Intensive agriculture, with the aid of some irrigation, is commonly found, as is the practice of rotating crops. Wheat, barley, maize, millet, and other cereals, with peas and beans, are chiefly cultivated in the north; rice, sugar, and indigo in the south. Cotton is grown widely even as far north as the northern part of the province of Chihli, the chief area of production being the Yangtze Valley. China's cotton production in 1927 totaled 2,000,000 bales (of 500 pounds each), of which 50 per cent was used by domestic mills, 33½ per cent for padding, and 16 per cent exported. Raw cotton imports in 1927 totaled 750,000 bales, one-third of which was American. All imports of cotton were used in mills, which turned out nearly 900,000,000 pounds of yarn and 9,000,000 pieces of cloth. Tea is cultivated exclusively in the West and the South. Silk culture, one of the most successful industries in the country, supplies about 25 per cent of the world's supply of raw silk.

An important feature in the development of the Chinese industries is the erection of cotton and woolen mills, and of silk filatures in Shanghai, Canton, and elsewhere, while native looms are found in most dwellings. The estimated production of cotton yarn in China during the year ended June 1, 1927, totaled 1,954,000 piculs, of which 676,000 piculs were produced in Japanese, 1,116,000 in Chinese, and 162,000 in British-owned mills. The estimated production of cotton piece goods amounted to 11,165,000 pieces, of which 5,658,000 pieces were manufactured in Japanese, 4,409,000 in Chinese, and 1,098,000 in British mills. At the beginning of 1928 the 118 cotton mills in China had 3,726,584 spindles and 24,382 looms. At the large centres flour and rice mills are beginning to supersede native methods of treating wheat and rice. There are over 150 modern mills.

China is tremendously rich in mineral resources, although they are scarcely exploited. The coal fields, which have been rated as the first in the world, cover an area of 133,613 acres and the average annual output is estimated at 16,000,000 tons. The production of iron ore is estimated at 1,500,000 tons yearly. Oil, both from wells and shale, is being produced in ever-increasing quantities. Copper, tin, antimony, wolfram, gold, and silver are also produced in commercial quantities. China's antimony mines supply 60 per cent of the world's needs.

COMMERCE. During 1927, the courage, tenacity, and ingenuity of Chinese merchants were taxed to the utmost—the more so since obstacles obstructing the free movement of goods were wholly domestic. Political agitation, military operations, commandeering of transportation facilities, labor disputes, and boycotts, combined with depression of local currencies and a tempo-



PRINCIPAL COMMODITIES ENTERING INTO THE EXPORT AND IMPORT TRADE OF CHINA
[Quantities and values in thousands—000 omitted]

Articles	1926		1927	
	Quantity	Value haikwan taels	Quantity	Value haikwan taels
Exports		864,925		918,620
Silk, raw	168	140,358	160	128,704
Silk piece goods	19	21,364	17	18,115
Beans	22,565	75,068	29,112	96,184
Bean cake	28,189	74,218	26,076	64,367
Cotton, raw	879	29,399	1,147	47,307
Eggs and egg products		37,921		27,245
Hides and skins		28,562		35,223
Millet	5,393	23,480	6,626	31,273
Bean oil	2,667	29,993	2,470	27,684
Tea	838	26,169	873	31,617
Wood oil	748	14,962	901	21,971
Peanuts	2,005	18,534	2,455	16,346
Bristles	64	10,469	62	9,290
Carpets		6,547		6,528
Sausage casings		4,876		4,831
Tobacco, leaf	217	4,240	227	4,648
Antimony	353	6,344	300	4,496
Hair nets	1,317	1,698	1,203	1,277
Hair, human	36	1,588	32	1,446
Imports		1,124,221		1,012,932
Cotton and cotton manufactures		295,647		229,730
Raw cotton	2,745	93,141	2,416	79,812
Cotton piece goods		167,590		128,512
Sugar	11,243	77,718	9,678	60,920
Metals and manufactures		56,749		53,887
Iron and steel manufactures		34,589		31,542
Rice and paddy	18,701	89,844	21,091	107,323
Mineral oils, refined	293,050	69,159	230,675	57,195
Kerosene	245,076	55,448	161,156	42,382
Machinery and electrical equipment		27,891		30,700
Tobacco, leaf	755	25,575	633	22,056
Dyes, paints, and varnishes		21,184		20,512
Aniline dyes, all kinds		19,014		15,448
Cigarettes	7,739	20,764	4,781	12,056
Fish and fish products		27,824		27,318
Lumber and timber, softwood	192,179	11,579	196,132	8,832
Leather, sole	139	6,356	101	4,795
Leather belting		2,509		3,267

rary embargo upon silver exports, rendered trade spasmodic in some districts and paralyzed it in others. Treaty ports, not disturbed by actual warfare, were, nevertheless, hampered by the same heavy taxes and military exactions imposed elsewhere and by a pervading fear of uncertainty.

Notwithstanding these obstacles, the combined value of China's export and import merchandise trade in 1927, aggregating 1,931,552,000 taels, or \$1,332,770,000, exceeded expectations. This total represented a loss of 2.9 per cent as compared with the figure for the preceding year, but was 12 per cent above that for 1925. The total value of China's merchandise sold abroad increased from 864,295,000 taels, or \$656,864,000, to 918,620,000 taels, or \$698,151,000. In contrast, China's purchases of foreign products aggregated 1,012,932,000 taels, a loss of nearly 10 per cent from the value of imports in 1926; a gain, however, of approximately 6.8 per cent over the import value of 1925. The fall in silver exchange to the lowest point since 1915 was favorable to larger imports, but was more than offset by the silver embargo which made it difficult for Chinese merchants to finance their imports, and by adverse conditions which tended to intimidate trade.

In the foregoing table which lists the leading items entering into China's export and import trade, it is shown that 13 commodities constituted 84.8 per cent of the total value of imports into China during 1926, but only 70 per cent during 1927.

From the following table, which shows the distribution of China's foreign trade for 1926 and

1927 among the leading countries participating, it is evident that the United States and Japan continued the closest competitors:

DISTRIBUTION OF CHINA'S TRADE BY PRINCIPAL COUNTRIES OF ORIGIN AND DESTINATION

[In thousands of haikwan taels—000 omitted]

Countries	1926		1927	
	Exports	Imports	Exports	Imports
Japan	864,295	258,117	918,620	268,665
Hong Kong		93,802		169,680
United States		150,113		121,753
Union of Socialistic Soviet Republics		64,120		77,174
Great Britain		55,836		57,991
France		68,146		51,437
Netherlands		17,804		26,760
Malaya (Straits Settlements)		30,060		22,275
India		15,922		22,195
Germany		17,760		20,355
Netherland East Indies		9,390		10,856
French Indo-China		18,434		6,003
Philippine Islands		6,663		5,951
Siam		7,341		5,238
Belgium		3,596		5,587
Italy		13,266		9,494
Canada		1,674		1,209
Imports	1,124,221		1,012,932	
Japan		341,711		302,175
Hong Kong		119,976		207,984
United States		185,066		164,377
Great Britain		115,533		74,226
Germany		45,382		38,895
French Indo-China		51,504		32,218
Netherland East Indies		31,340		25,394
Union of Socialistic Soviet Republics		21,444		21,155
France		16,791		14,498
Canada		24,037		12,930
Belgium		14,346		11,941
Italy		9,092		11,632
Malaya		9,889		9,533
Netherlands		10,499		8,623
Siam		16,545		8,527
Philippine Islands		5,297		4,524

FINANCE. It is impossible to give a definite or an accurate statement as to China's fiscal operations. With the widespread political and military agitation and operations, apparently no account of revenue and expenditure for the country at large can be obtained. According to a statement issued by the officiating inspector general of customs of the Chinese Government, disturbed economic conditions during 1927 were responsible for a considerable decrease in Maritime Customs revenue. Total collections for the year reached 68,687,000 haikwan taels, or 9,534,000 taels less than in 1926. Native customs revenues during 1927 aggregated 3,784,000 haikwan taels, a decrease of 720,000 as compared with such revenues for 1926. The statement of the officiating inspector general disclosed that (1) all foreign-loan and indemnity obligations secured on the customs revenue, including the service of the reorganization loan, have been met in full; (2) the service, both interest and redemption, of all domestic loans secured on canceled indemnities has been met in full; and (3) the interest on those domestic loans which are secured on the customs revenue surplus were also met in full. Owing to deficiency of revenue, no redemption payments of any of these loans could be made, in consequence of which, redemption payments of the consolidated debt were two years in arrears of schedule.

Following the inauguration of the new Government on Oct. 10, 1928, regulations were promulgated establishing the National Bank of the Chinese Republic. The bank is capitalized at approximately \$9,200,000 and is authorized to issue convertible bills, mint coins, and direct the flotation of foreign and domestic loans. Its head office was to be at Shanghai.

COMMUNICATIONS. During 1926, 158,996 vessels of 134,659,606 tons entered and cleared Chinese ports. Chinese railroads include about 9370 miles of railway, counting in the 1857 miles in Manchuria. See **MANCHURIA**. Operations in 1928 as in 1927 were severely limited due to the unsettled conditions of the country. Tracks, roadbeds, and equipment sank to a very low state of repair and it will be years before China will have a workable transportation system, built and operated along modern lines.

GOVERNMENT. During most of 1928 it may be said that China had no government at all, although the Nationalists in the South and the Peking Government in the North made claims of ruling their respective sections. For the establishment of an apparent all-China Government see below under *History*.

HISTORY

The year 1928 possibly saw the dawn of a new era for China. By the close of the period the entire country was under the sway of the Nationalist movement, even Manchuria, the envy of Japan, raising its banners in support of the Nanking Government before the new year came in. The Nationalist Government made great strides forward in attaining its objectives, the unification of China, the end of foreign domination, and the eradication of corruption and inefficiency. The dominant leader in the sweeping change throughout the country was the political and military leader of the Kuomintang, Chiang Kai-shek, the same man who appeared to have lost his grip in 1927. In the early spring plans and preparations were made by the Nationalists

under Chiang Kai-shek, the Northerners under Chang Tso-lin, and the Kaifeng Province under Feng Yu-hsiang to renew the hostilities which had been the ruination of China's economic and political life for over a decade. It appeared that Chang Tso-lin was ready to take the field with superior forces and munitions with the object of annihilating Feng Yu-hsiang before any help could be sent to him from Chiang Kai-shek.

After several months of inactivity the forces under Chiang Kai-shek began to move on Shantung, with the capital, Tsinan-fu as the objective. The city was captured on May 1, but brought the Nationalists into serious conflict with the Japanese. In the last week of April the Japanese Government had been sending reinforcements into the Province of Shantung, theoretically for the protection of her citizens and property, but probably with the idea of keeping this wealthy province out of the hands of Chiang Kai-shek. The inevitable occurred of course. The Nationalist Government strenuously protested the sending of foreign troops and when its protest went unnoticed, a clash occurred between the armed forces of the Nationalists and the Japanese. Street fighting broke out on May 3, and the Japanese general ordered the Nationalists to leave the city and remain an appreciable distance outside of its walls.

When this ultimatum was refused, the superior Japanese Army began an attack which was intended to drive the Nationalists from the city. During the night of May 11, the Nationalist forces fled from the city after agencies interested in peace had used every effort to end hostilities. At the end of the struggle Japan was left in complete control of the city. Chiang appealed to the League of Nations and also further protested to the Japanese Government, but received no satisfactory reply to his complaint that the Japanese were the aggressors in the struggle.

This Tsinan-fu affair was only a temporary check to the march of progress of the Nationalists, however. The next object of their attack was Peking, the stronghold of Chang Tso-lin. The capture of the city, the objective of the Nationalists ever since 1926, was a comparatively simple affair. Chang, probably upon the advice of Japan, decided to abandon the city and flee into Manchuria with his Northern Army. Forces of Yen Hsi-shan, the Governor of Shansi, first entered the city on June 5 and formally took possession of it on June 8. While Chang was in flight to Mukden, his Manchurian capital, his train was bombed and he received wounds from which he later died.

The Nationalists failed to move into Manchuria with their forces, probably because of the solemn warning given by Japan that her interests in that province were so great and of such a nature that she could not allow them to be interfered with by civil war. Japan had economically penetrated the district to such an extent, that to all intents and purposes it was her own. The death of Chang, which in some quarters was laid at the door of Japan, removed the last great leader in the path of Nationalist supremacy. The reason some observers place the blame of Chang's death on Japan was because of the strained relations that existed between that country and the overlord of Manchuria for some time before his death. Previously he had been a mere tool of the Japanese Foreign Office, but in recent years, especially since his removal from Mukden to

Peking, he had chafed under Japan's political and military guidance and had shown signs of ultimately breaking completely with Tokyo. There were certainly suspicious features of the bombing, which must have been known to the Japanese guards long before the train arrived.

Chang's death was kept a secret for almost three weeks. It was thought that had not Japan known that the opinion of the world would have been decidedly against her, she would have seized Manchuria then and there. The Nationalist leaders sent representatives to Mukden to talk things over with Chang's followers and were cordially received by Chang's eldest son, who succeeded his father as overlord of Manchuria. As a result of the parley, the Manchurian leaders agreed to recognize Nanking's authority and to raise the Nationalist flag under certain conditions. When the Japanese Government learned of this, the younger Chang was told that such action was fraught with grave consequences and that Japan would be forced to take such steps as seemed necessary to maintain the status quo. Reinforcements were sent by Japan to Mukden and the Chinese authorities there determined that it would be the best policy to hold up allegiance to Nanking for the time being, through necessity rather than through choice.

Whatever influence Japan had with the people of this wealthy province disappeared at this time and the vast bulk of the people became very anti-Japanese, having in mind, possibly, the fate of Korea a number of years previous. Despite the efforts of the best Japanese diplomats, the Government of Mukden remained firm in its intention of allying itself with the Nationalist Government, consenting only to the delay of the announcement for a period of three months. At the expiration of this time the formal acceptance of allegiance to Nanking was adopted and China was a unit once again, for the time being at least. Foreign observers asked the question, "How long?"

With the cessation of the civil war, the new Government started to prepare for peace. The capital of China was moved from Peking to Nanking and the name of the former city was changed to Peiping. In a formal announcement the Nanking Government stated that the military aspects of the civil war were over and the full efforts of the Government would be put forth to reabsorb the millions of soldiers into industry. The Government was to be neither militaristic nor communistic but was to be based on the principles of the Kuomintang, nationalism, democracy, and the people's welfare. Almost as soon as the firing had died away, the Nanking authorities began negotiations to clear up the international aspects of the situation. The United States was the first nation to accept the invitation of the Chinese Government to negotiate the tariff question, and on July 25, a treaty was signed between the two countries repealing the tariff provisions of the treaty of 1903, by which China was limited to a 5 per cent ad valorem duty, and providing for China's right to make her own tariffs. The treaty was to become effective on Jan. 1, 1929, subject to ratification. The United States Senate had not ratified the treaty down to the close of the year, due to more pressing problems confronting it.

The American Secretary of State, Mr. Kellogg, in a very cordial note sent to the Chinese authorities very shortly before the signing of

of the treaty stated: "The good will of the United States toward China is proverbial and the American Government and people welcome every advance made by the Chinese in the direction of unity, peace, and progress. We do not believe in interference in their internal affairs. We ask of them only that which we look for from every nation with which we maintain friendly intercourse, specifically, proper and adequate protection of American citizens, their property and their lawful rights, and, in general, treatment in no way discriminatory as compared with the treatment accorded to the interests or nationals of any other country. With a deep realization of the nature of the tremendous difficulties confronting the Chinese nation, I am impelled to affirm my belief that a new and unified China is in process of emerging from the chaos of civil war and turmoil which has distressed that country for many years. Certainly this is the hope of the people of the United States." It was felt in many quarters that the prompt token of friendship expressed by the United States may have had some effect on the Japanese attitude toward Manchuria.

The action of the United States was followed by almost identical action by several other powers before the close of the year. Twelve nations concluded new treaties with the Nanking Government, and of the twelve, Italy, Belgium, Spain, Denmark, and Portugal pledged themselves to relinquish extraterritoriality by Jan. 1, 1930. All the twelve agreed to Chinese tariff autonomy. It is significant to note that the only country which refused to negotiate a new treaty was Japan. The contents of most of these treaties were not published until the last week in December. On December 20 Great Britain formally recognized the Chinese National Government.

On October 9 the civil government was virtually established by the election of Chiang Kai-shek as the head of the Government of China. What actually happened, of course, was not an election in which the people participated, but a selection by the executive committee of the Kuomintang. Very shortly afterward the following cabinet was announced: Foreign Affairs, C. T. Wang; Finance, T. V. Soong; War, Feng Yu-hsiang; Agriculture, Yi Pei-chi; Industry, H. H. Kung; Education, Chiang Mengling; Railways, Sun Fo; Interior, Yen Hsi-shan; Communications, Wang Po-chun; and Health, Hsueh Tu-pi. Dr. C. C. Wu was appointed Minister to Washington to succeed Dr. Sze, who was transferred to London.

The organic law of the National Government of the Republic of China, as published in the *Times Current History* for December, 1928, provides in its more important sections as follows:

The National Government shall be composed of five yuan, executive, legislative, judicial, examination and control. There shall be a President and from twelve to sixteen State Councillors of the National Government, from which the Presidents and Vice Presidents of the five yuan shall be appointed.

The National Government shall conduct national affairs through a State Council, of which the President of the National Government shall be the Chairman. All matters which cannot be settled between two or more yuan shall be referred to the State Council for decision. All laws promulgated and all mandates issued by virtue of a decision of the State Council shall be signed by the President of the National Government and shall be countersigned by the Presidents of the five yuan. Each of the five yuan may, according to law, issue orders.

Executive Yuan—The executive yuan shall be the highest executive organ of the National Government and

shall have a President and Vice President, the latter substituting in the absence of the President. The executive *yuan* shall establish Ministries to which will be entrusted various executive duties and may appoint commissions for specified executive matters. The Ministries shall each have a Minister, a political Vice Minister and an administrative Vice Minister, and the various commissions shall each have a Chairman and Vice Chairman, all of whom shall be appointed and removed by the National Government at the instance of the President of the executive *yuan*.

Legislative Yuan—Budgets, amnesties, declarations of war, peace negotiations, and the conclusion of treaties and other important international matters are to be submitted to the legislative *yuan*; also the appointment or dismissal of all officials above third-class rank; also all matters which cannot be settled between the various Ministries and commissions of the executive *yuan*, and all matters which according to law or in the opinion of the President shall be decided at such meetings.

The legislative *yuan* shall be the highest legislative organ of the National Government and shall have power to decide upon legislation, budgets, amnesties, declarations of war, peace negotiations and treaties and the conclusion of other important international matters. It shall have a President, Vice President, and shall be composed of from forty-nine to ninety-nine members to be appointed by the National Government at the instance of the President of said *yuan*.

Judicial Yuan—The judicial *yuan* shall be the highest judicial organ of the National Government and shall take charge of judicial trials, judicial administration, the disciplinary punishment of officials and the trial of administrative cases. The granting of pardons, reprieves and the restitution of civic rights shall be submitted by the President of the judicial *yuan* to the National Government for approval and action. The judicial *yuan* shall have a President and Vice President and may introduce bills within its competence into the legislative *yuan*. The organization of the judicial *yuan* shall be determined by law.

Examination Yuan—The examination *yuan* shall be the highest examination organ of the National Government and shall take charge of examinations and determine the qualifications for public service. All public functionaries shall be appointed only after they have passed an examination and their qualifications for public service have been determined by the examination *yuan* which shall have a President and Vice President and may introduce bills on matters within its competence into the legislative *yuan*. Its organization shall be determined by law.

Control Yuan—The control *yuan* shall be the highest supervisory organ of the National Government and shall, according to law, exercise the following powers: impeachment and auditing. The control *yuan* shall have power to introduce into the legislative *yuan* bills on matters within its competence. The organization of the control *yuan* shall be determined by law.

See PHILOLOGY, MODERN, for Chinese Literature.

CHORAL SOCIETIES. See MUSIC.

CHOSEN. See KOREA.

CHREE, KRĒ, CHARLES. Scotch physicist and authority on terrestrial magnetism, atmospheric electricity, and allied subjects, died at Richmond, England, August 12. He was born at Lintrathen, Forfarshire, Scotland, May 5, 1860, and was graduated with the highest honors from the University of Aberdeen, in 1879. He received a mathematical scholarship at King's College, Cambridge, where also he achieved honors, and was elected a fellow in 1885, being reelected as research fellow five years later. Working at the Cavendish Laboratory, and developing an interest in terrestrial magnetism, and atmospheric electricity, he was appointed superintendent of the Kew Observatory in 1893, a position which he held until his retirement in 1925. Under his direction the Kew Observatory attained a leading position among the magnetic observatories of the world, and considerable testing was carried on here until the work was taken over by the National Physical Laboratory. Dr. Chree served as president of the Royal Meteorological Society, and of the Physical Society of London. He was also president of the section for terrestrial magnetism and atmospheric electricity of the International Commission for Geodesy and Geophysics. He received the Sc.D. degree from Cam-

bridge in 1896, and the LL.D. degree from the University of Aberdeen two years later. He was elected Fellow of the Royal Society in 1897, receiving its Hughes Medal in 1919. He had previously been awarded the James Watt Medal by the Institution of Civil Engineers, in 1905. He published a notable monograph on *Terrestrial Magnetism* in 1912, and delivered the seventh Kelvin lecture on the same subject before the Institution of Electrical Engineers, in 1916. He wrote many scientific papers.

CHRISTIAN CHURCH. A church originating in three religious movements, that of the Rev. James O'Kelly of Virginia, who, in 1792, opposed Methodist bishops, and those of the New England Baptist, Abner Jones, who organized a separate church in 1801, and of the Kentucky group, formed in 1804. These groups eventually united, all holding that minor points of belief should be subordinated to Christian brotherhood. A General Convention which first convened at Urbana, Ill., in October, 1826 meets every four years. Biennial conventions are held in districts, each consisting of a number of States. The Church carries on home and foreign missions, educational work, publication, evangelism, Christian unity work, social service, and other general activities. Its home-mission field includes new Americans in the East, the lumber camps in Washington, Indians, mountaineers, and Negroes; its foreign field, Japan, Porto Rico, and South America. It maintains eight educational institutions. Its publishing house at Dayton, Ohio, issues, among other periodicals, the oldest religious newspaper in the World, the *Herald of Gospel Liberty*. In 1928 the Christian Church had 1283 churches, 1047 ministers, and 110,326 members, and a total revenue of \$1,483,980. Its Sunday schools, numbering 1324, had 105,067 pupils.

CHRISTIAN ENDEAVOR, INTERNATIONAL SOCIETY OF. An organization comprised of all Christian Endeavor societies in North America, and a member of the World's Christian Endeavor Union, which comprises Christian Endeavor societies in every country on the globe. The first society was organized in Williston Congregational Church, Portland, Me., Feb. 2, 1881, by the late Rev. Francis E. Clark, who for many years was president of the international and world's organizations. The present name was adopted by vote of the Board of Trustees in August, 1927, previous to which time the Society was known as the United Society of Christian Endeavor.

The Society is organized into departments to carry on its work, among the more important being: a Department of Christian Vocations, under the direction of the Rev. Stanley B. Vandersall, which yearly gives vocational counsel to thousands of young people in high schools and colleges; and the Department of Travel and Recreation, which supplies, free of charge, monthly church-centred recreation service to Christian Endeavor Societies and church workers and conducts World Friendship Tours to Europe for young people at cost. The society promotes systematic and proportionate giving through the Tenth Legion, in which 1268 were enrolled during the year, and emphasizes regular habits of prayer and daily Bible reading through the Quiet Hour, in which 6972 were enrolled. The organization of the international society comprised an active organization for each State and each Canadian Province. These in turn were divided

into 1200 city, county, and district unions, each including 400 to 500 societies. There were, in 1928, approximately 80,000 societies throughout the world, with a membership of 4,000,000. The international society, which meets biennially, held a convention at Cleveland, Ohio, July 4-9, 1927, with a total attendance of more than 17,000, and the 1929 meeting was planned for Kansas City, Mo., July 3-8. The officers for the year were: President, Daniel A. Poling, D.D.; vice presidents, the Rev. William Hiram Foulkes, D.D., and the Rev. Howard B. Grose, D.D.; treasurer, A. J. Shartle; secretary, E. P. Gates. The headquarters of the society are at Mount Vernon and Joy Streets, Boston, Mass.

CHRISTIANS. See DISCIPLES OF CHRIST.

CHRISTIAN SCIENCE. A system of metaphysical or spiritual healing discovered by Mrs. Mary Baker Eddy in 1866. The first church was established by Mrs. Eddy in Boston in 1879 and given a charter by the Commonwealth of Massachusetts. In 1892 it was reorganized as a voluntary religious association known as the First Church of Christ, Scientist, in Boston, called more frequently by its adherents the "Mother Church." Mrs. Eddy wrote the textbook of the movement, *Science and Health with Key to the Scriptures* published in 1875. The Sunday services of the church are conducted by a first and second reader, the first reading from the textbook, and the second from the authorized version of the Bible. In 1928 there were over 9885 practitioners of Christian Science in the United States and other countries, who devoted their entire time to healing the sick through prayer.

A Board of Directors administered the affairs of the Mother Church. Its annual meeting was held in Boston, June 4. Reports indicated expenditures totaling \$1,756,707.71 from the General Fund of the Church during the year, and \$1,011,000 from the Permanent Special Funds, and \$150,000 for relief of the Mississippi flood victims. During the fiscal year ending May 31, 91 churches and Christian Science societies, including three university societies, were recognized as branches of the Mother Church; 20 new organizations were located in Europe, and 1 in Australia. The total number of recognized branches, including 32 college and university societies, was 2344. Three departments conduct the principal activities of the movement: The Board of Education, Board of Lectureship, and Committee on Publication. The educational board instructs and authorizes students to teach Christian Science; the Board of Lectureship consists of 24 members who deliver free lectures on Christian Science throughout the world. During the year, 3626 lectures were delivered, of which 3239 were in the United States and 387 in foreign fields.

The Committee on Publication aims to correct impositions on the public in regard to Christian Science. It also endeavors to guard the rights of Christian Scientists against restriction by public authority. The Christian Science Publishing Society, which publishes and issues the authorized literature of the Mother Church, operates under a deed of trust granted by Mrs. Eddy; its affairs are now administered by a Board of Trustees according to the Manual of the church. The publishing society issues the daily paper of the movement, *The Christian Science Monitor*; other periodicals include: *The Christian Science Journal*, *The Christian Science*

Sentinel, *Der Herold der Christian Science*, and *Le Héraut de Christian Science*. The Benevolent Association of the church conducts a sanatorium. The Pleasant View Home, opened July 15, 1927, was visited during the year by 13,500 persons. The headquarters of the church are at 206 Massachusetts Avenue, Boston. Mrs. Ella W. Hoag was president of the Mother Church for the year ending May 31, 1928.

CHRISTMAS ISLAND. An island belonging to Great Britain in the Indian Ocean, lying 190 miles southwest of Java, annexed to the Straits Settlements in 1888. Area, 62 square miles; population, estimated in 1926, 1043. Christmas Island is important because of its very large deposits of phosphate of lime which constitute its only export. In 1926 exports amounted to £228,296 and imports to £12,723. The chief imports are tools, machinery, railway materials, and lorries. For administrative purposes the island is connected with the settlement of Singapore.

Christmas Island is also the name of the largest atoll in the Pacific Ocean. It belongs to the British colony of Gilbert and Ellice Islands.

CHURCHES. See ARCHITECTURE.

CHURCHES OF CHRIST. See DISCIPLES OF CHRIST.

CHURCHES OF CHRIST IN AMERICA. FEDERAL COUNCIL OF THE. See FEDERAL COUNCIL OF THE CHURCHES OF CHRIST IN AMERICA.

CHURCH OF ENGLAND. See ENGLAND, CHURCH OF.

CHURCH OF GOD. See ADVENTISTS.

CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS. MORMON CHURCH. See LATTER DAY SAINTS, CHURCH OF.

CIGARS AND CIGARETTES. See TOBACCO.

CINCINNATI, UNIVERSITY OF. An institution for the higher education of men and women at Cincinnati, Ohio; founded in 1870. The registration for the autumn of 1928 was 9001 distributed as follows: Graduate school, 226; liberal arts, 1270; evening courses in liberal arts, 860; education 1189; engineering, 1525; evening commerce courses, 2931; applied arts, 343; household administration, 124; law, 174; medicine, 272; nursing and health, 87. The summer school enrollment was 1310. There were 571 members on the faculty. The endowment funds of the University for the year 1927 were \$6,239,545, and the income for the same period, \$1,820,821. The library contained 144,648 bound volumes and 40,000 pamphlets. Acting president, Herman Schneider.

CINEMATOGRAPHY. See PHOTOGRAPHY; MOVING PICTURES.

CITRUS FRUITS. See HORTICULTURE.

CITY AND REGIONAL PLANNING. The city planning movement which began in the United States early in the present century had not gone on many years before it was recognized that adequate planning could not stop at city boundaries. The need for taking in larger areas became increasingly evident, but, as was the case with city planning in the United States at the start, there were no accepted governmental agencies to take up regional planning, as the broader movement was finally named. Just as in the early days of city planning in the United States, most of the work was done by private organizations, such as civic associations, chambers of commerce, or frequently by special committees, so has most of the regional planning

work been undertaken. The parallel continued as regards the gradual assumption of both city and regional planning by governmental organizations, but the percentage of instances of regional planning by governmental bodies was much smaller than that of city planning in the hands of municipal commissions.

City-planning commissions in the United States in 1928 numbered several hundred, although most of them had little more than advisory powers. If county-planning commissions were not counted as agencies of regional planning, as in most cases they probably should not be, then there were as yet but few regional planning organizations that were not private rather than public in character. This was a handicap to regional planning work beyond the mere paper-planning and pamphlet-reporting stage.

The chief centres of regional planning in the United States are Boston, New York City, Syracuse, Buffalo, Philadelphia, Chicago, Milwaukee, Minneapolis and St. Paul, Los Angeles, and San Francisco. At Boston, investigations were being made by a division of metropolitan planning within the Metropolitan District Commission, under legislation of 1923. At Syracuse and Buffalo, it was being carried out under State legislative authority. How to set the boundary within which a given regional planning study should be made is for the most part subject to rather arbitrary decision. Frequently, a number of counties are embraced within such a region. Sometimes two or more States are concerned.

The regional plan of New York and its environs has so long a radius as to include not only a number of counties in New York State but also one in Connecticut and a number in New Jersey. The Philadelphia regional-planning studies cover parts of three States. For an outline of regional planning and of engineering work to put it in effect, see *Engineering News-Record*, Oct. 4, 1928, p. 496, and for a description of the activities of the Chicago Regional Planning Commission, see the same journal for Nov. 22, 1928, p. 758, these being the first two of a series of articles by W. W. DeBerard, lately chief engineer, Chicago Regional Planning Association. Other articles will follow in 1929.

In 1928, the Committee on Regional Plan of New York and Its Environs published Nos. 4 and 5 of its eight *Survey Volumes*, these two being on "Transit and Transportation" and on "Public Recreation." Besides the eight *Survey Volumes*, the committee was getting out a series of monographs and it also was to publish two *Plan Volumes*, one "Planning Principles and Standards with Illustrated Proposals" and the other an "Atlas of Complete Graphic Plans of New York Region with Descriptive Text."

Activities in the field of city as distinguished from regional planning continued unabated, more particularly as regards the establishment of major traffic highways, civic centres, and zoning regulations. A conflagration at Fall River early in 1928, which swept the centre of the city, was followed by the preparation of tentative plans for wider streets and for the location of new public buildings. New city halls at Duluth, Minn., and Los Angeles, Calif., were built as parts of civic centre plans.

As the result of two years of study, the City Committee on Plan and Survey, appointed by Mayor Walker of New York City, made a report in June, 1928. The committee, which consisted

of 507 citizens, was divided into eight sub-committees, each of which made a separate report as follows: Housing, zoning, and the distribution of population; port and terminal facilities; traffic regulation and street uses; sanitation and harbor pollution; highways and bridges; parks and recreational facilities; departmental organizations; finance, budget, and revenue. The leading recommendation of the committee was the creation of a permanent planning board for New York City to "include both architectural and engineering members." Besides the city planning board, the general committee stated that there should also be one or two regional planning advisory boards for the New York State counties within the New York region; a similar advisory planning board for the New York counties forming a part of the New York region. The report also stated that the main and subsidiary organizations just mentioned "would not render it less desirable for the Committee on the Regional Plan of New York and Its Environs to carry on planning research."

ZONING. The number of cities in the United States having more or less complete zoning regulations on Dec. 31, 1928, was 723, according to reports of the U. S. Department of Commerce. This was an addition of 65 during 1928. The estimated population of the 723 cities in 1928 was more than 34,000,000. New York State led in the number of zoned municipalities, with 125. New Jersey had 83; California, 70; Illinois, 66; Massachusetts, 62; Pennsylvania, 40; Ohio, 38; Missouri, 28. Legislation to put into effect the constitutional amendment of 1927 specifically authorizing zoning in New Jersey was passed unanimously by the 1928 Legislature of that State after a series of attempts at weakening amendments.

ENGLAND AND WALES. A press summary of the report of the British Ministry of Health dealing with city planning in England and Wales indicated great activity in both town and regional planning in those countries "during the past year" (year covered not specifically stated). The dispatch stated that 157 local authorities with populations of 20,000 and more were engaged on town-planning schemes, while 236 other authorities with lesser populations had taken up planning work. In regional planning, there were 53 joint committees whose jurisdiction covers 836 local authorities and a total approximate area of 16,000,000 acres, on which there is a population of over 31,000,000 people.

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CITY GOVERNMENT, CITY MANAGER, ETC. See MUNICIPAL GOVERNMENT.

CIVIC FEDERATION, NATIONAL. See NATIONAL CIVIC FEDERATION.

CIVIL ENGINEERS, AMERICAN SOCIETY OF. An association of professional engineers, founded in 1852 to advance engineering and architectural knowledge and practice, to maintain high professional standards, and to encourage intercourse between men of practical science. It is made up of: Members, including civil, military naval, mining, mechanical, electrical, and other engineers in active practice 12 years, and qualified to design as well as to direct engineering work; associate members, those who have been practicing eight years; juniors, beginners in the profession; affiliates, persons qualified to cooperate with engineers, but not themselves engineers; fellows, contributors to the permanent funds, who are not eligible to membership; and honorary members, persons of acknowledged eminence in engineering. Four general meetings are held each year: The annual meeting held the third week in January, in New York, at which the results of a previous ballot for officers are announced, reports of committees received and other business transacted; the annual convention, held during the summer, with general business and technical sessions, and interesting excursions; and the spring and autumn meetings. In addition to these out-of-town meetings, the various local sections hold meetings at frequent intervals.

In 1928 there were 46 local sections, and 93 affiliated student chapters in colleges throughout the country. The membership, as of Nov. 13, 1928, was 13,454, divided as follows: Honorary members, 16; members, 5555; associate members, 5833; juniors, 1904; affiliates, 139; fellows, 7. The annual meeting was held on January 18-20, and the spring meeting in Washington, D. C., April 25-27, at which the important business included papers on various technical activities of the Federal Government; the engineering features of the National Capital were also discussed, and a conference was held on the work of the student chapters.

The fifty-eighth annual convention, held in Buffalo, N. Y., July 17-20, considered the preservation and utilization of Niagara Falls, and the regulation of flow and navigation on the Great Lakes. At the autumn meeting, held on October 3-5, in San Diego, Calif., the general technical topic was the engineering features involved in air transport and its coordination with other transportation agencies, as well as the planning and location of airports and landing fields, with other municipal facilities. In addition to the general sessions at the quarterly meetings, conferences of local section representatives were held, and the nine technical divisions presented papers on various branches of civil engineering. Fifteen special committees, enlisting about 100 members, followed out investigations throughout the year, and over 80 members of the Society served on joint committees and boards, with representatives of other Societies, for research and standardization.

The Society publishes monthly *Proceedings*, containing the papers presented at meetings, with discussions, and items of general interest. At the end of each year, the papers and discussions are reprinted in the annual volume of *Transactions*. The Society also issues an annual *Year Book*. The officers for 1928 were: President, Lincoln Bush; vice presidents, John C. Hoyt, Arthur E. Morgan, George W. Fuller, and Louis C. Hill; secretary, George T. Sea-

bury; treasurer, Otis E. Hovey. The headquarters of the Society are in the Engineering Societies Building, 33 West 39th St., New York, of which, with three other national engineering societies, it is joint owner, as well as of the engineering library there installed.

CIVIL SERVICE REFORM LEAGUE, NATIONAL. Organized in 1881 for the purpose of putting to an end the so-called spoils system of making appointments to public office, it has sought to accomplish this end by promoting administrative efficiency through the application of the merit system to the appointment, promotion, and tenure of government officials. On the principle that public office is a public trust, it advocates that those best fitted through demonstrated ability and capacity should serve the state. The league is made up of local associations in various parts of the country and of individual members. During 1928, it sponsored legislation placing postmasters of the first, second, and third classes in the competitive civil service. It also urged legislation empowering the President to place in the competitive classified service all Federal positions then exempt by statute. It urged the adoption of the recommendations of the Joint Congressional Committee to include in the competitive service all of the field positions in the Internal Revenue Service, including collectors and deputy collectors of internal revenue and collectors of customs. It reported to Congress the need for the extension of the Civil Service Act to the District of Columbia service. The league successfully opposed the proposal in Congress to admit into the competitive service, without examination, the old prohibition agents, with the result that such positions were being filled after competitive examination. The league actively opposed the proposal in Congress to except from the merit system the numerous census employees.

Through its field division the league endeavors to secure the adoption and improvement of civil service laws in various states and cities throughout the country. Reports of its investigations are issued periodically. *Good Government* is the official organ of the league and the officers in 1928 were: President, George McAneny; chairman of the executive committee, W. W. Montgomery, Jr.; chairman of the council, Howard R. Guild; treasurer, A. S. Frissell; secretary, H. Eliot Kaplan. Headquarters are at 8 West 40th Street, New York.

CIVIL SERVICE RETIREMENT. See UNITED STATES, under *Pensions*.

CIVITAN INTERNATIONAL. An organization composed of selected professional and business men, throughout the United States, who have dedicated themselves to unselfish service to their city, county, state, or nation. The first Civitan Club was founded at Birmingham, Ala., in 1917. Civitan, a word coined by one of its founders, and meaning "the citizen," has as its motto, "Builders of Good Citizenship." The organization of field work of the club did not begin until 1920, but by 1921, when the first annual convention was held, there were 30 clubs; the membership in 1928 was over 7500. At the eighth annual convention, held in June, 1928, in Detroit, Mich., the programme of Civitan was stressed and the control of tuberculosis and the curbing of crime were especially emphasized. Several clubs have jointly sponsored the building of tuberculosis hospitals, notably in Knox-

ville, Tenn., where \$150,000 was raised for Beverly Hills, a tuberculosis sanatorium, and the Greer and Greenville Clubs which were also successful in obtaining \$150,000 for a sanatorium at Greenville, S. C. Among the activities of the individual clubs were the sponsoring of good citizen essay contests; care of crippled children, under-privileged children, baby clinics; scout work, boy-scout camps; programmes against crime; building of municipal golf courses; pig, corn, and cotton clubs; street paving; Americanization work; constructive health programmes; juvenile court work; city beautification; and the raising of scholarship funds. The official publication is *The Civitan*, a monthly, published at Knoxville, Tenn., Neal B. Spahr, editor. The national officers for 1928 were: President, James N. MacLean, New York; vice presidents, Robert W. Brooks, St. Louis, Mo., George W. Simons, Jr., Jacksonville, Fla., Sidney H. Guthrie, Dayton, Ohio; secretary, Neal B. Spahr, Knoxville, Tenn.; treasurer, Claude L. Hagan, Birmingham, Ala.; field secretary, Arthur Cundy, Mayfield, Ky. The headquarters of the association are at 1001-2 Jackson Bldg., Birmingham, Ala., and the secretary's office is at 1115-6 General Bldg., Knoxville, Tenn.

CLAIMS COMMISSION. See **ARBITRATION, INTERNATIONAL.**

CLARK UNIVERSITY. A non-sectarian university, comprising a college for men and a coeducational graduate division of arts and sciences, at Worcester, Mass., founded in 1889. The registration for the autumn of 1928 was 481, including 235 undergraduates, 65 graduate students, 16 special students, and 165 extension students. The enrollment for the summer session was 224. There were 40 members in the faculty. The productive funds amounted to approximately \$5,000,000. The university library contained 105,000 volumes. President, Wallace W. Atwood, Ph.D.

CLASSICAL ANTIQUITIES. See **ARCHÆOLOGY.**

CLASSICAL STUDIES. See **PHILOLOGY, CLASSICAL.**

CLÉMENT, Klá'mä', EDMOND. A celebrated French dramatic tenor, died at Nice, February 22. He was born in Paris, Mar. 28, 1867. After graduation from the Paris Conservatoire as winner of the first prize, he made his début, in 1889, at the Opéra Comique as Vincent in Gounod's *Mireille*. With few interruptions for tours he remained with that institution until his death. In 1909-10 he sang at the Metropolitan Opera House, New York, and from 1911-13 with the Boston Opera Company. In 1921 he made an extensive concert tour of the United States and Canada. Besides, he sang as guest in the principal opera houses of Belgium, Spain, Portugal, England, and Denmark. In 1919 he was made Chevalier of the Legion of Honor. His art was characterized by subtle refinement.

CLEVELAND MUSEUM OF ART. See **ART MUSEUMS.**

CLIFTON, CHARLES. American automobile manufacturer and financier, died at Buffalo, N. Y., June 21. He was born at Buffalo, Sept. 20, 1853, and was educated at the Highland Military Academy, Worcester, Mass. After varied business experience, Mr. Clifton became, in 1897, secretary and treasurer of the George N. Pierce Company of Buffalo, and when that company was reorganized, in 1909 as the Pierce-Arrow

Motor Company he became its treasurer. In 1916 he was elected president and in 1919 chairman of the board. From 1904 to 1927 Mr. Clifton was president of the National Automobile Chamber of Commerce. He took an active interest in city planning and other civic matters, and especially in the problem of traffic congestion.

CLIMATE. See **METEOROLOGY.**

CLUBS, BOYS' AND GIRLS'. See **AGRICULTURAL EXTENSION WORK.**

COAL. The world's production of coal in 1927 was estimated at 1,470,000,000 metric tons, or the greatest production since the World War, as is indicated in the accompanying table. While there was a decline in output in the United States, the United Kingdom occupied a more normal position on account of the settlement of the coal strike, and Germany and France both showed increased production.

The accompanying table, prepared by the United States Bureau of Mines, presents information for the principal countries of the world for 1927 and earlier years. The figures were taken from such official sources as were available, supplemented by trade information and were subject to revision, being considered a preliminary estimate.

WORLD PRODUCTION OF COAL OF ALL GRADES,
1914-1927^a

Year	Production, in part estimated (metric tons)	Percentage produced by United States
1914	1,207,000,000	38.7
1915	1,193,000,000	40.5
1916	1,291,000,000	41.5
1917	1,356,000,000	43.6
1918	1,333,000,000	46.3
1919	1,173,000,000	42.8
1920	1,320,000,000	45.3
1921	1,135,000,000	40.5
1922	1,226,000,000	35.3
1923	1,359,000,000	43.9
1924	1,357,000,000	38.2
1925	1,372,000,000	38.5
1926	1,365,000,000	42.7
1927	1,470,000,000	36.9

^a Includes lignite and sub-bituminous coal as reported, without attempting to reduce to equivalent tonnage of bituminous coal.

UNITED STATES PRODUCTION OF BITUMINOUS COAL. The total production of bituminous coal (including lignite and coal coked at the mines) during the calendar year 1928 was estimated by the United States Bureau of Mines at 492,755,000 net tons. In comparison with 1927, this was a decrease of 25,008,000 tons, or 4.8 per cent. As shown by the following table, the 1928 production was the smallest in any year since 1924.

UNITED STATES PRODUCTION OF BITUMINOUS COAL
[Net tons]^a

Period	Production	Average per working day
Calendar year		
1922	422,268,000	1,379,000
1923	564,565,000	1,845,000
1924	483,687,000	1,573,000
1925	520,085,000	1,692,000
1926	573,367,000	1,864,000
1927	517,763,000	1,684,000
1928 ^b	492,755,000	1,605,000

^a Figures for calendar years 1922-1927 are final figures as reported by the operators. Those for 1928 are preliminary estimates.

^b Subject to revision.

COAL AND LIGNITE PRODUCED IN THE PRINCIPAL COUNTRIES OF THE WORLD IN THE CAL-
ENDAR YEARS, 1924-1927, IN METRIC TONS

[Compiled by L. M. Jones, of the Bureau of Mines]

Country	1924	1925	1926	1927
North America:				
Canada—				
Coal	9,138,841	8,627,519	11,687,032	12,341,000
Lignite	3,233,459	3,288,262	3,261,599	3,468,000
Greenland	2,500	2,100	1,500	2,900
Mexico	1,226,696	1,444,498	1,309,138	1,031,305
United States—				
Anthracite	79,765,491	56,079,281	76,599,968	73,661,094
Bituminous and lignite	438,790,754	471,781,446	520,147,061	469,704,558
South America:				
Argentina	(*)	(*)	(*)	(*)
Brazil	342,200	392,376	400,000 ^b	400,000 ^b
Chile	1,539,141	1,453,228	1,490,509	1,500,000
Colombia	(*)	(*)	(*)	(*)
Peru	151,735	101,081	165,979	162,370 ^c
Venezuela ^d	16,695	16,798	15,928	16,104
Europe:				
Albania—				
Lignite	(*)	(*)	1,578	(*)
Austria—				
Coal	171,959	145,200	157,308	175,601
Lignite	2,785,816	3,033,378	2,957,728	3,064,068
Belgium	23,861,910	23,097,040	25,259,600	27,573,550
Bulgaria—				
Coal	69,670	73,000	62,150	69,192
Lignite	1,155,291	1,156,006	1,140,093	1,168,454
Czechoslovakia—				
Coal	15,178,942	12,558,992	14,176,998	14,016,300
Lignite	20,459,690	18,604,678	18,515,666	19,620,637
France—				
Coal	44,011,240	47,047,630	51,421,772	51,779,090
Lignite	944,080	1,007,270	1,056,200	1,068,000
Germany ^e —				
Coal	118,768,748	132,622,125	145,295,724	153,599,354
Lignite	124,637,201	139,724,614	139,150,557	150,503,914
Saar ^f	14,032,120	12,989,850	13,680,874	13,595,824
Greece—				
Lignite	131,109	142,076	150,321	131,199
Hungary—				
Coal	744,394	805,019	826,906	784,154
Lignite	6,333,286	5,520,760	5,822,299	6,243,385
Irish Free State	(*)	(*)	(*)	(*)
Italy—				
Coal	126,985	188,522	209,260	164,089
Lignite	917,491	1,105,474	1,181,342	912,458
Netherlands—				
Coal	6,180,182	7,116,970	8,842,687	9,488,412
Lignite	191,202	207,623	211,194	201,382
Poland				
Coal	32,224,680	29,081,327	35,747,348	38,084,086
Lignite	88,038	65,675	76,026	78,464
Portugal—				
Coal	124,801	123,450	201,732	178,554
Lignite	8,121	16,970	30,699	25,713
Rumania—				
Coal	297,288	313,572	322,191	373,457
Lignite	2,479,083	2,615,278	2,731,362	2,850,011
Russia ^g —				
Coal	12,849,307	13,354,011	20,614,717 ^h	27,448,262
Lignite	1,059,754	983,020	1,605,327 ⁱ	
Spain—				
Coal	6,127,586	6,117,342	6,536,087	6,562,936
Lignite	411,773	402,690	399,830	429,602
Spitzbergen	451,914	413,412	291,211	313,000
Sweden	437,856	263,879	383,673	398,298
Switzerland	(*)	(*)	(*)	7,000
Turkey—				
Lignite	(*)	2,000	4,638	4,000
United Kingdom:				
Great Britain	271,405,414	247,079,210	128,305,291	255,264,615
Northern Ireland—				
Lignite	(*)	(*)	(*)	510
Jugo-Slavia—				
Coal	131,633	178,456	190,814	287,728
Lignite	4,053,607	3,973,870	3,976,938	4,458,481
Asia:				
British Borneo	120,613	101,904	92,583	80,466
China	20,969,000	24,255,000	(*)	(*)
Chosen	399,415	634,257	682,896	735,000
Federated Malay States	378,778	414,684	471,736	470,432
India, British	21,514,131	21,239,892	21,336,204	22,436,757
Indo-China—				
Coal	1,231,313	1,357,231	1,284,661	1,482,900
Lignite	4,565	5,739	5,598	7,000
Japan (including Taiwan and Karafuto)—				
Coal	31,816,662	33,363,381	33,496,879	33,400,000
Lignite	176,764	169,426	161,134	(*)
Netherlands East Indies	1,446,757	1,400,725	1,466,359	1,620,205
Philippine Islands	47,938	48,681	28,577	23,410
Russia ^h —				
Coal	1,796,649	1,629,555	2,875,741 ⁱ	4,502,963
Lignite	604,733	533,880	687,648 ^j	

COAL AND LIGNITE PRODUCED IN THE PRINCIPAL COUNTRIES OF THE WORLD IN THE CAL-
ENDAR YEARS, 1924-1927, IN METRIC TONS—Continued
[Compiled by L. M. Jones, of the Bureau of Mines.]

Country	1924	1925	1926	1927
Sakhalin	97,078	(^a)	(^a)	(^a)
Straits Settlements (Labuan)	10	41		
Turkey—				
Coal	769,000	745,000	828,213	812,900
Lignite	(^a)	2,368	(^a)	5,947
Africa:				
Algeria	9,228	10,087	13,731	21,269
Belgian Congo	81,000	83,000	90,250	85,500
Nigeria	235,848	242,833	358,944 [†]	359,512
Portuguese East Africa		18,086	10,868	15,834
Rhodesia, Southern	591,526	689,201	874,140	908,744
Tunisia—				
Lignite	305			
Union of South Africa	11,819,988	12,321,728	12,949,950	12,580,314
Oceania:				
Australia:				
New South Wales	11,804,688	11,579,108	11,060,483	11,304,688
Queensland	1,141,143	1,196,067	1,240,657	1,116,680
Tasmania	77,208	83,009	104,000	118,854
Victoria—				
Coal	526,634	542,821	600,487	695,227
Lignite	129,536	890,535	978,310	1,478,842
Western Australia	428,635	444,482	482,440	509,554
New Zealand—				
Coal	1,102,418	1,044,726	1,215,590	1,299,044
Lignite	1,014,224	1,070,269	1,060,361	1,104,142
Total, all grades	1,357,000,000	1,372,000,000	1,365,000,000	1,470,000,000
Lignite (total of items shown above)	171,000,000	185,000,000	185,000,000	199,000,000
Bituminous and anthracite (by subtraction)	1,186,000,000	1,187,000,000	1,180,000,000	1,271,000,000

^a Estimate included in total.

^b Approximate production.

[†] Includes a small quantity of asphaltite.

[‡] Exclusive of output of State of Falcón (about 8,000 tons), for which estimate is included in total.

[§] Exclusive of mines in the Saar under French control.

^{||} Mines under French control.

[¶] Year ended Sept. 30.

[‡] Exclusive of Sakhalin.

^{*} Year ended Mar. 31 of year following that stated.

The outstanding event in the bituminous market situation in 1928 was the settlement through district wage agreements of the long-drawn-out labor controversy in the union fields of Illinois, Indiana, central Ohio, and the Southwest. Although the general acceptance of a wage cut by the miners increased the potential production, this was not entirely to the advantage of the industry, since large reserve stocks had been accumulating and there was no marked increase in consumption demands. Neither the Senate investigations in western Pennsylvania, eastern Ohio, and northern West Virginia mining fields, nor the expiration of the truce agreement in the central West and Southwest, with resulting danger of a tie-up in the remaining union fields, affected the market situation to any extent. Buying was limited largely to current requirements and usually occurred at times when conditions were favorable to the consumer, so that the sales realizations were not especially encouraging. Cargo shipments in 1928 exceeded those in 1927, the figures being 33,412,121 and 32,851,681 net tons, respectively, for the two years, with the increases in 1928 due largely to the new records established on the Great Lakes, where the shipments moved promptly from the docks of the Northwest and were maintained at a steady volume throughout the season of navigation.

ANTHRACITE. Commercial production of anthracite from 1922 to 1927 including shipments and local sales, but excluding colliery consumption, as reported by the United States Bureau of Mines, with an estimate for 1928 was given as follows:

UNITED STATES ANTHRACITE PRODUCTION

	Gross tons
1922	43,197,231 ^a
1923	76,328,026
1924	71,688,784
1925	50,582,990 ^a
1926	69,648,420
1927	65,662,550
1928	63,300,000 ^b

^a Strike years; ^b estimated.

According to estimates of the United States Bureau of Mines, the anthracite production for the year 1928, amounted to 76,734,000 net tons, being 4.2 per cent less than the total tonnage produced in the preceding year. Final figures for the year 1927 showed an output of 80,096,000 net tons. It was pointed out that the mild winter months in 1927 and 1928 were responsible for a decreased production, and that a prevalence of such conditions would affect the production for the winter of 1928-29. It was generally accepted that weather conditions, and not the substitution of oil or other fuels, had been and would continue to be, for some time at least, the principal factor governing the production of anthracite. In spite of a loss of markets in New England and other regions distant from the coal fields, during the strikes of 1922 and 1925, and the inroads made by substitute fuels, New England was returning to the use of coal, although Welsh and Scotch anthracite, German ovoids, and other foreign fuels were still imported in considerable quantities and "smokeless" domestic coal and fuel oil continued in use, due to resentment over the anthracite tonnage tax. Shipments of hard coal to New England showed a gratifying increase

over the previous year, and those to Canada, which takes 99 per cent of the anthracite exports of the United States, showed a similar recovery. The anthracite trade in the north-western territory, where the high cost of the product and high transportation and handling costs were responsible for the continued use of other fuels forced upon that section during the War, did not show the same recovery. Prior to the World War, shipments of anthracite over the Great Lakes averaged in excess of 4,000,000 gross tons; in 1913 it was a little over 5,000,000; in 1924 it had dropped to 2,814,515 tons; in 1927 to 1,702,592 tons; and in 1928 to 1,248,644 tons; and despite strenuous efforts to regain lost markets the figures indicate that the results have not been as encouraging as in Canada and New England.

Another disturbing factor in the distribution of anthracite was the extension of hand-to-mouth buying, already prevalent in other branches of household economics, to the providing of the fuel supply. As a consequence, domestic distribution of anthracite in the summer months of 1928 was considerably reduced as compared with former years, and the producers and distributors were confronted with the problem of inducing the purchase of domestic coal before it was needed for consumption. The matter of installment buying was under study and experimentation, in an effort partially to solve the problem. It was stated that the quality of anthracite in 1928 was better than it had ever been, while the industry further increased its service to the public by establishing a traffic bureau, and instituting mechanical research, aimed to improve methods of combustion, heat control, and ash handling.

An analysis of the market in various sections of the country shows some of the specific conditions reacting on the industry. In Colorado and New Mexico, the trade was largely dominated by the weather which was unfavorable to an increased demand. In Kentucky, wage reductions in the union fields north of the Ohio River and increased freight rate differentials in favor of Northern mines on lake cargo shipments affected competitive conditions, causing a decline in prices. In Cincinnati, Columbus, and Cleveland, Ohio, the situation was more or less unfavorable, due to weather conditions, and rate reductions in favor of other regions; in the Pittsburgh region adverse weather, overproduction of domestic grades, and wage cuts caused depression in the industry; central Pennsylvania producers fared somewhat better due to improvements effected and efforts to regain lost markets. Prices in New York were poor and affected producers of cheap grades, especially, and despite efforts to regain lost markets the results were disappointing. The Philadelphia market showed considerable improvement in stability, but consumption in Baltimore was less than in preceding years. For Bituminous coal strike, see STRIKES AND LOCKOUTS.

COAST GUARD. See PROHIBITION.

COCHIN-CHINA, kô'chin-chi'na. The southernmost colony in French Indo-China (see FRENCH INDO-CHINA). Area, estimated at 26,476 square miles; population estimated in 1928 at 4,119,832, consisting chiefly of Annamites, Cambodians, Moïs, Chams, and Chinese, with a few Indians, Malays, Tagals, and foreigners. In 1926 there were 12,865 French and 587 European

foreigners. Saigon, the capital, had a population in 1926 of 143,167, of whom 9892 were Europeans, exclusive of 3066 troops. Cholon had a population of 193,713 of whom 93,556 were Chinese. There are about 1445 schools with 3337 teachers and 104,464 pupils. About four-fifths of the 2,325,269 hectares under cultivation are given over to rice. In 1927, 5,118,000 acres were under its cultivation and in the same year the production of cleaned rice amounted to 1,486,006 metric tons. Other crops are maize, beans, sweet potatoes, ground-nuts, cotton, rubber, sugar cane, tobacco, coffee, coconuts, pepper, oranges, bananas, etc. Other sources of wealth are livestock and fisheries, the output of the latter being valued at 2,800,000 francs annually. There are 11 rice mills in Saigon and Cholon, which turn out 3000 tons of rice daily. There are also in these cities two sawmills, two soap factories, and a varnish factory. Commerce is largely in the hands of the Europeans and Chinese, although the Annamites are traders on a small scale. The total exports in 1926 amounted to 3,067,682,872 francs and the total imports to 1,835,375,255 francs. In the same year the local budget balanced at 19,471,075 piastres. Trade is carried on mainly through the port of Saigon, which was visited by 878 steamers of 1,959,577 tons in 1926. Cochin-China is ruled directly by a governor and a council of 24 members. It was in the French Parliament.

COELENERATES. See ZOÖLOGY.

COFFEE. See BRAZIL.

COHEN, ALFRED J. See DALE, ALAN.

COINS, VALUES OF FOREIGN. The legal estimates of the values of foreign coins on Jan. 1, 1929, as issued by the Secretary of the Treasury are given in the table on page 176.

COKE. Statistics of the United States coke industry in 1928, published by the U. S. Bureau of Mines, gave a total production of 52,581,577 gross tons, of which 4,376,000 tons were beehive coke and 48,205,577 tons were by-product coke, the latter output being the largest on record. The production in 1927 is given in the table on page 177. These figures relate exclusively to beehive and by-product coke and do not include the output of petroleum coke, which amounted to 1,145,000 tons, nor of retort nor gas-house coke, the sales of which amounted to between one and two millions for the year. The figures include by-product coke ovens operated in conjunction with city gas supply.

The production of all coke in 1927 fell below the high marks reached in 1918, 1923, and 1926, although the decrease in output of by-product coke was rather negligible when compared with that of the previous year, being slightly more than 1 per cent, while a much larger percentage decrease of about 42 per cent occurred in the production of beehive coke. The production of all coke decreased from 56,865,567 tons in 1926 to 51,092,000 tons in 1927, with a distribution as follows: By-product coke in 1927, 43,885,000 as against 44,376,586 tons in the previous year; beehive coke, 7,207,000 tons in 1927, as against 12,488,951 tons in 1926. As is shown in these figures, most of the decrease in coke production was borne by the beehive branch of the industry, which was becoming more and more an auxiliary called upon to furnish only the surplus requirements of the metallurgical industry which cannot be met by the by-product ovens. The decrease in the coke

VALUES OF FOREIGN COINS

Country	Legal standard	Monetary unit	Value in U. S. money	Remarks
Argentina Republic	Gold	Peso	\$0.9648	Currency: Paper normally convertible at 44% of face value.
Austria	Gold	Schilling	.1407	1 belga equals 5 paper francs.
Belgium	Gold	Belga	.1390	Law of July 11, 1928. 13½ bolivianos equal 1 pound sterling.
Bolivia	Gold	Boliviano	.3650	Currency: Government paper convertible at 4.567 paper milreis to the gold milreis (\$0.1196), by decree of May 23, 1928.
Brazil	Gold	Milreis	.5462	
British Colonies in Australasia and Africa	Gold	Pound sterling	4.8665	
British Honduras	Gold	Dollar	1.0000	
Bulgaria	Gold	Lev	.1930	
Canada	Gold	Dollar	1.0000	
Chile	Gold	Peso	.1217	The tael is a unit of weight; not a coin. The customs unit is the Haikwan tael. The values of other taels are based on their relation to the value of the Haikwan tael.
China	Silver	Tael	.6913	The Yuan silver dollar of 100 cents is the monetary unit of the Chinese Republic; it is equivalent to .637— of the Haikwan tael.
			.6892	
			.6812	
			.6753	
			.6394	
			.7034	
			.6468	
			.6699	
			.6841	
			.6488	
			.6646	
			.6739	
			.6314	
			.6386	
			.6956	
			.6699	
			.4480	Mexican silver pesos issued under Mexican decree of Nov. 13, 1918, are of silver content approximately 41% less than the dollar here quoted; and those issued under decree of Oct. 27, 1919, contain about 51% less silver.
		Dollar	.4547	
			.4580	
Colombia	Gold	Peso	.9733	Currency: Gov't paper and silver.
Costa Rica	Gold	Colon	.4653	Law establishing conversion office ratio 4 colons (non-gold) = \$1 U. S.
Cuba	Gold	Peso	1.0000	
Denmark	Gold	Krone	.2680	
Dominican Republic	Gold	Dollar	1.0000	U. S. money is chief circulating medium.
Ecuador	Gold	Sucre	.2000	By law effective March 19, 1927.
Egypt	Gold	Pound (100 piasters)	4.9431	
Estonia	Gold	Kroon	.2680	
Finland	Gold	Markka	.0252	
France	Gold	Franc	.0392	By law of June 24, 1928.
Germany	Gold	Reichsmark	.2382	
Great Britain	Gold	Pound sterling	4.8665	
Greece	Gold	Drachma	.0130	By law effective May 14, 1928.
Guatemala	Gold	Quetzal	1.0000	
Haiti	Gold	Gourde	.2000	Currency: National bank notes redeemable on demand in U. S. dollars.
Honduras	Gold	Lempira	.5000	Legally established, not yet operative.
Hungary	Gold	Pengő	.1749	
India (British)	Gold	Rupce	.3650	
Indo-China	Silver	Piaster	.4554	By law effective April 1, 1927.
Italy	Gold	Lira	.0526	
Japan	Gold	Yen	.4985	By decree effective Dec. 22, 1927.
Latvia	Gold	Lat	.1930	
Liberia	Gold	Dollar	1.0000	
Lithuania	Gold	Litas	.1000	Currency: Depreciated silver token coins.
Mexico	Gold	Peso	.4985	Currency: Notes of the Bank of Lithuania.
Netherlands	Gold	Guilder (florin)	.4020	
Newfoundland	Gold	Dollar	1.0000	
Nicaragua	Gold	Cordoba	1.0000	
Norway	Gold	Krone	.2680	
Panama	Gold	Balboa	1.0000	
Paraguay	Gold	Peso (Argentine)	.9648	
Persia	Silver	Kran	.0776	Currency: Depreciated paper currency.
Peru	Gold	Libra	4.8665	Currency: Silver circulating above its metallic value. Gold coin is a commodity only, normally worth double the silver of same denomination.
Philippine Islands	Gold	Peso	.5000	
Poland	Gold	Zloty	.1122	
Portugal	Gold	Escudo	1.0805	By decree effective October 13, 1927.
Rumania	Gold	Leu	.1930	Currency: Inconvertible paper.
Russia	Gold	Ruble	.5146	
Salvador	Gold	Colon	.5000	Pre-war unit. (Soviet chervonetz = 10 gold rubles.)
Siam	Gold	Baht (Tical)	.4424	
Spain	Gold	Peseta	.1930	By law of April 15, 1928. Valuation is for gold peseta; currency is notes of the Bank of Spain.
Straits Settlements	Gold	Dollar	.5678	
Sweden	Gold	Krona	.2680	
Switzerland	Gold	Franc	.1930	
Turkey	Gold	Piaster	.0440	(100 piasters equal to Turkish £.)
Uruguay	Gold	Peso	1.0342	Currency: Inconvertible paper.
Venezuela	Gold	Bolivar	.1930	
Yugo-Slavia	Gold	Dinar	.1930	

industry as a whole was in part due to the fact that 1926 figures for coke production were run up as a result of the demand for coke to meet the deficit in anthracite caused by the miners' strike, whereas in 1927 there was an abundant supply of anthracite. A more important cause, however, was the diminished activity of the blast furnace, the output of pig iron declining 7.3 per cent below 1926.

The changes in relative proportion of beehive and by-product coke are significant—the 1913 beehive ovens contributing 72.5 per cent of the total, while their share had fallen to 22

installation of 650 in the previous year. With the addition of the new ovens in 1927, the potential coking capacity of by-product plants at the close of the year, at 100 per cent operation, under favorable conditions, was 56,600,000 net tons, and with additions during 1928 the figure was raised to more than 58,000,000 tons. There were 79 by-product plants that produced coke in 1927, of which 44 were affiliated with iron furnaces, and 35 were non-furnace plants. The output of the furnace plants was 77.7 per cent of the total, and that of the non-furnace plants 22.3 per cent.

STATISTICAL SUMMARY OF THE COKE INDUSTRY IN 1927
[Based on Report of U. S. Bureau of Mines]

	By-product	Beehive	Total
Coke produced:			
Quantity net tons..	43,584,726	7,207,417	51,092,143
Value	\$232,043,803	\$30,276,775	\$262,320,578
Screenings and breeze produced:			
Quantity net tons..	4,099,702	146,362	4,246,064
Value	\$8,673,616	\$199,263	\$8,872,879
Coal charged into ovens:			
Quantity net tons..	63,239,773	11,208,115	74,447,888
Value	\$244,674,126	\$23,261,637	\$267,935,753
Average value	\$3.87	\$2.03	\$3.60
Average yield in percentage of coal charged:			
Coke	69.4	64.3	68.6
Breeze (at plants actually recovering)	6.5	3.1	6.2
Ovens:			
In existence Jan. 1	11,716	52,558	64,274
In existence Dec. 31	12,475	49,795	62,270
Dismantled during year	291	2,876	3,167
In course of construction Dec. 31	289	.....	289
Coke used by operator in blast furnace or affiliated works:			
Quantity net tons..	30,687,198	905,359	31,592,557
Value	\$145,123,216	\$4,035,732	\$149,158,948
Disposal of coke:			
Sold for furnace use to affiliated corporations—			
Quantity net tons..	2,959,247	2,017,616	4,976,863
Value	\$15,903,197	\$9,153,274	\$25,056,471
Merchant sales of furnace coke—			
Quantity net tons..	976,786	2,780,433	3,757,219
Value	\$5,474,102	\$10,243,164	\$15,717,266
Sold for foundry use—			
Quantity net tons..	1,938,653	809,590	2,748,243
Value	\$15,112,967	\$4,085,876	\$19,198,843
Sold for domestic use—			
Quantity net tons..	4,702,529	111,103	4,813,632
Value	\$32,447,939	\$446,236	\$32,894,175
Sold for industrial and other use—			
Quantity net tons..	2,187,498	569,749	2,757,247
Value	\$14,660,531	\$2,154,443	\$16,815,024
Disposal of screenings and breeze:			
Used by operator—			
Quantity net tons..	3,439,571	47,406	3,486,977
Value	\$6,769,151	\$24,052	\$6,793,203
Sold—			
Quantity net tons..	716,237	38,277	754,514
Value	\$2,042,496	\$82,359	\$2,124,855
By-products produced:			
Gas M. cubic feet..	700,894,799	.....	700,894,799
Tar gallons..	546,859,460	.....	546,859,460
Ammonium sulphate or equivalent pounds..	1,434,920,352	.....	1,434,920,352
Crude light oil gallons..	164,488,233	.....	164,488,233
Value of by-products sold:			
Gas (surplus)	\$70,092,168	.....	\$70,092,168
Tar	\$16,095,478	.....	\$16,095,478
Ammonium sulphate or equivalent	\$27,883,268	.....	\$27,883,268
Crude light oil and derivatives	\$25,153,099	.....	\$25,153,099

per cent in 1926, and the depression in the iron industry in 1927 carried it still lower, the average for the year being 13.8 per cent, and a still smaller percentage for the month of December, 1927, when beehive ovens furnished only 9.4 per cent, as against 90.6 per cent furnished by the by-product ovens.

Pennsylvania, which has been the leading by-product coke producing State for several years, produced over 11,000,000 tons in 1927; Ohio ranked second, Indiana third, Alabama fourth, and New York fifth. Three new by-product plants started operations during 1927, and 660 new ovens were installed, as compared with an

COLDS IN THE HEAD. Dr. Hoelzel of the University of Chicago, a lifelong sufferer from colds, has been led to believe that diet plays a notable rôle in their genesis. Fasteners may show complete immunity, while starchy foods of all kinds are far more conducive to colds than diets of high protein and fat with a minimum of carbohydrate. This fact may be the true explanation of the immunity to colds of polar explorers and natives. A predominantly carbohydrate diet leads to water retention which renders the surface more sensitive to exposure.

COLGATE UNIVERSITY. A non-sectarian institution for the higher education of men at Hamilton, N. Y.; founded in 1819. In the autumn

of 1928 there were 993 students enrolled, and 84 members on the faculty. The productive funds amounted to approximately \$4,160,000, and the income for the year to approximately \$400,000. The library contained 114,000 volumes. Eaton Hall, formerly used by the Colgate Theological Seminary, became available to the College as a dormitory for freshmen, upon the merging of Colgate Theological Seminary in June, 1928, with the Rochester Theological Seminary, the new institution to be known as the Colgate-Rochester Divinity School, and located in Rochester, N. Y. President of the College, George Barton Cutten, Ph.D., D.D., LL.D.

COLLEGES. See **UNIVERSITIES AND COLLEGES.**

COLOMBIA. A South American republic in the northwestern part of the continent. Capital Bogota.

AREA AND POPULATION. The area of Colombia is given at 440,846 square miles and the population according to the census of Oct. 14, 1918, 5,855,077; estimated in 1927 at 7,282,924. The total population was distributed as follows: whites 20 per cent; negroes 5 per cent; Indians, 7 per cent; mulattoes, 18 per cent; mestizos, 50 per cent. The capital, Bogota, had a population in 1918 of 143,994, and estimated in October, 1923, at 166,148. The country is divided into 14 departments, 3 intendencies, and 6 commissionerships. Other important towns with their populations in 1918 are: Barranquilla, 64,543, estimated in 1923, 81,330; Medellin, 79,146, estimated in 1923, 86,641; Cartagena, 51,382; estimated in 1923, 68,119; Cali, 45,825, estimated in 1923, 68,777; and Manizale, 43,203, estimated in 1923, 51,838. By virtue of a law of Aug. 11, 1928, the taking of a general census of the Republic was authorized.

EDUCATION. According to the latest available statistics, there were 6674 primary schools with 395,541 pupils; 302 secondary schools with 6569 pupils; 25 industrial schools with 1392 students; and 6 art schools with 399 students. There were also 17 normal schools with 911 students. The oldest university is that at Bogota (founded in 1572). This and the school of mines at Medellin are national institutions. The other universities are departmental.

PRODUCTION, MINERAL RESOURCES, ETC. Notwithstanding the increasing importance of petroleum production within the past few years, Colombia continues to be primarily an agricultural country. Favorable coffee prices and a good crop are quickly reflected in an active market and increased imports. Coffee production, in fact, is considered the most reliable national barometer. Production has increased steadily and in recent years exports of this commodity accounted for about 80 per cent of the total value of exports. Prior to the World War, coffee represented but little more than 50 per cent of the total exports. The United States takes about 90 per cent of the total coffee shipments.

Colombia was unusually prosperous in 1925, 1926, and 1927, but toward the latter part of 1927 a downward trend was noticeable. The exceptionally favorable conditions of these three years can be traced primarily to excellent coffee crops marketed at high prices, and secondarily to the exploitation and exportation of petroleum, commencing with the opening of a pipe line from the oil fields at Barranca Bermeja to the seaport of Cartagena in the summer of 1926. Correspondingly, the signs of depression at the

end of 1927, were traceable to these two dominant factors, particularly to coffee, which exerts a broader influence upon the economic life of the country as a whole. It was estimated that the crop for 1927 would reach 2,450,000 bags of 60 kilos each, as compared with 2,454,000 bags in 1926. Although the weight of the crop was approximately the same for the two years, the export price showed a steady decline as the year 1927 advanced. Twelve million banana trees were blown down during May, 1927, with an approximate local loss of \$7,200,000. However, 8,454,000 bunches of bananas were exported during the year, as compared with 11,000,000 bunches in 1926. Owing to ample rainfall, the cotton and sugar-cane crops were good and were expected to show an increase over the 1926 production.

Colombia is rich in minerals. Gold is found in nearly all the departments and other minerals more or less worked are copper, lead, mercury, cinnabar, manganese, emeralds, and platinum. Colombia produces one-half of the world's output of platinum, the remainder coming from Russia. The Government operates the emerald mines which produce 90 per cent of the world's supply. Although only producing oil a comparatively short time, Colombia is already considered an important factor in making estimates of future world production. The completion of the work of looping the pipe line from the oil fields to the port of Cartagena increased the capacity of the line from 30,000 to 50,000 barrels per day. Petroleum exports totaled 13,679,000 barrels in 1927, as compared with 4,700,000 barrels in 1926. The production of petroleum in 1927 amounted to 15,760,797 barrels.

COMMERCE. The total value of all exports in 1927 was \$121,340,000, of which \$91,800,000 went to the United States. The coffee exports totaled 151,730,000 kilos valued at \$79,808,000; bananas, 196,624,000 kilos, valued at \$5,587,000; hides and skins, 7,229,000 kilos, valued at \$2,638,000. The platinum exported was valued at \$4,602,000. The value of imports was \$118,894,000. The United States supplied 43.3 per cent of the imports, the United Kingdom, 15.4 per cent, and Germany 12.7 per cent.

FINANCE. On Nov. 9, 1927, Congress approved the budget of ordinary receipts and expenditures for the fiscal year Jan. 1-Dec. 31, 1928, as follows:

<i>Revenues</i>	
<i>Source</i>	<i>Pesos</i>
National property	8,885,418.47
Taxes	32,168,548.94
National services	2,585,211.44
Sundry revenues	1,754,877.87
New revenues	5,050,000.00
Probable surplus, 1927	2,000,000.00
Total revenues	51,944,056.72
<i>Expenditures</i>	
<i>Branch of Government</i>	<i>Pesos</i>
Ministry of Government	9,197,017.10
Ministry of Foreign Relations	676,013.60
Treasury and Public Credit	7,004,340.38
Ministry of War	6,927,298.95
Ministry of Industries	1,573,309.70
Public Instruction and Health	5,354,579.63
Ministry of Public Works	7,947,826.35
Bureau of Supplies	196,626.80
Comptroller's office	523,414.32
Mails and Telegraphs	5,757,639.25
Total expenditures	45,158,061.08

The surplus was therefore expected to be 6,785,995.64 pesos. The budget of extraordinary expenditures included amortization of foreign and internal debts, 2,835,996 pesos, and construction of public works producing revenue, 28,950,000 pesos. To cover this extraordinary expenditure the Government would have the surplus from the ordinary budget and the proceeds of a loan of 25,000,000 pesos, which had already been secured.

COMMUNICATIONS. Transportation has always been a dominant economic factor in Colombia, and the lack of adequate transportation facilities, chiefly on the Magdalena River, has always accentuated depression in bad times and detracted from the effects of prosperity in good times. On Jan. 1, 1928, Colombia had 2314 kilometers of railroad in operation. The number of passengers carried in 1927 was 11,239,000; freight, 2,670,000 tons; gross receipts, 16,283,000 pesos. The one main transportation artery of Colombia, upon which many of the railways depend for freight and passengers, is the Magdalena River, which is not always navigable. The lower Magdalena River is separated from the upper Magdalena by dangerous and rocky rapids in the vicinity of the city of Honda, which is situated about 600 miles from the port of Barranquilla. From La Dorada to a point above the city of Honda, the river is quite bad, and only when the river is very high are boats able to make a continuous voyage from Barranquilla to Girardot and then boats of small size only can be used. During the wet season the river floods neighboring territory to a large extent, but during the dry season it recedes to very shallow depths. Low and high seasons are spasmodic, but as a general rule the river can be expected to be exceptionally low during the first three months of every year.

During 1927, transportation facilities were little improved, although extensions to a number of railroads increased the total mileage. The airplane service was improved by the use of larger planes, and a new service was inaugurated between the Atlantic and Pacific coasts. Of outstanding importance in transportation during the year was the official inauguration on Dec. 25, 1928, of the railroad into the city of Manizales, giving that city an all-rail route over the Pacific railroad to Buenaventura. Work was commenced on the great highway from Medellin to the Gulf of Uraba on the Caribbean coast, and the highway from Cali to Buenaventura was also started. In 1927 there were 20,000 miles of telegraph wire and 18,042 telephone instruments in use. The number of automobiles registered in 1926 was 7916.

GOVERNMENT. The executive power is vested in a president elected for four years by direct popular vote, and legislative power in a congress of two houses: the senate of 34 members, elected indirectly for four years, and the house of representatives with 92 members elected by direct popular vote for two years. President in 1928, Dr. Miguel Abadía Méndez, elected Feb. 14, 1926, for the term 1926-30.

HISTORY. It appeared during the year that the United States was to have a similar experience with Colombia over the question of oil as was experienced with Mexico in recent years. The question arose over a law of Jan. 30, 1928, which gave the Minister of Industries supreme control over the oil lands of the coun-

try. To this functionary was given the right to determine the validity of oil-land titles, which if not reasonably held would revert to the Government. He was also given the power to issue drilling permits and no decision of his was reviewable by any court of law. Of course the American oil interests immediately protested to their Government at Washington. The Colombian Government in reply to these protestations practically stated that if the American companies had a legal title to their oil lands there would be no need to protest. The American oil companies seemed to feel that there was a cordial relationship existing between the British oil interests and the Colombian Government. This the Minister of Industries vigorously denied. This action with respect to oil was an indication of the intent of the Colombian Government to either curb or wrest control entirely of its natural resources from the hands of foreign concerns.

One concession of American oil interests was cancelled and led to diplomatic intervention on the part of the State Department at Washington. When the Colombian Government replied that the matter was one between the concessionaires and itself, the United States replied to the effect that the United States, had, under ordinary usage of international law, the right to protect the property of its nationals in foreign countries and would continue to do so. This was a cause for further attack on the United States and its policy in Central America and South America in the press of those countries. Colombia's reply stated that there was nothing in the affair to cause any cessation of the friendship existing between the two countries, and that it could be settled satisfactorily to both parties. Further trouble was expected, however, when Colombia had adopted a definite policy concerning oil lands within her borders.

COLORADO. **POPULATION.** According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 939,629. The estimated population on July 1, 1928, was 1,090,000. The capital is Denver.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Hay	1928	1,583,000	2,835,000 *	\$32,696,000
	1927	1,621,000	3,054,000 *	27,780,000
Wheat	1928	1,339,000	18,564,000	15,815,000
	1927	1,419,000	20,112,000	20,818,000
Potatoes	1928	110,000	18,420,000	6,089,000
	1927	96,000	14,400,000	7,920,000
Corn	1928	1,438,000	18,694,000	12,712,000
	1927	1,284,000	19,902,000	13,533,000
Dry beans	1928	309,000	1,890,000	4,726,000
	1927	281,000	1,546,000	4,174,000
Barley	1928	547,000	13,128,000	7,089,000
	1927	410,000	9,020,000	5,051,000
Oats	1928	193,000	5,953,000	2,692,000
	1927	189,000	5,481,000	2,631,000
Sugar beets	1928	179,000	2,322,000 *	.....
	1927	218,000	2,774,000 *	21,758,000

* tons.

MINERAL PRODUCTION. Coal production, forming the chief part of the mineral industry of the State, declined somewhat in 1927, to a total of 9,724,075 net tons, as compared with 10,637,225 in 1926; in value it was \$27,044,000 for 1927 and for 1926, \$29,529,000. Gold production fell sharply to 259,111 troy ounces for 1927, from 346,297 for 1926; in value, it was \$5,356,300 for

1927 and for 1926, \$7,158,600. Silver production followed the same trend, being 3,941,351 troy ounces for 1927, and for 1926, 5,037,574; in value, \$2,234,746 (1927) and \$3,143,446 (1926). Copper output increased, being 8,006,801 pounds in 1927 as against 4,657,591 in 1926. Petroleum production was maintained in quantity, being 2,787,000 barrels for 1927, as against 2,768,000 for 1926; but in value it fell to \$2,700,000 (estimated) for 1927, from \$5,100,000 for 1926. Clay products were important, attaining \$3,381,776 for 1926, the latest year on record, as against \$4,126,945 for 1925. Stone was produced in excess of a million dollars. The total mineral production of the State in 1926 was \$65,597,487; in 1925, \$63,512,998.

The 1928 estimated production of gold from Colorado mines attained a value of \$5,243,287; that of silver was 4,131,465 ounces, in value \$2,416,907; copper, 8,119,000 pounds, \$1,185,374; lead, 54,036,000 pounds, \$3,296,196; zinc, 65,203,000 pounds, \$3,912,180. The 1928 production of all five metals was valued at \$16,053,944.

FINANCE. State expenditures in the year ending Nov. 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of departments, \$11,185,490 (of which \$803,818 was aid to local education); for interest on debt, \$620,860; for permanent improvements, \$4,340,844; total, \$16,147,194 (of which \$5,804,374 was for highways, \$2,455,574 being for maintenance and \$3,348,800 for construction). Revenues were \$16,348,420, of which property and special taxes formed 40.1 per cent; earnings of governmental departments, 13 per cent; and licenses, including gasoline tax, 30.1 per cent. Property valuation was \$1,565,290,666; State taxation thereon, \$6,010,716. The net State debt on Nov. 30, 1927, was stated at \$11,413,844.

TRANSPORTATION. The total mileage of railroad under operation on Jan. 1, 1928, was 5062.74. There were built in 1928, an additional 2.73 miles of second track.

EDUCATION. An effort to amend the State constitution in order to provide a commissioner of education to be appointed by an elected State board of education was made, and the proposal was brought to a referendum vote, but was defeated by an adverse popular vote of about 146,000 to 89,000 in favor. The proposal was favored by the State Education Association and the Parent Teachers' Association.

CHARITIES AND CORRECTIONS. The State Department of Charities, nominally the Central State organization for the control of institutions of care and custody, had no appropriation for extensive work in 1928, and its activities were limited to caring for the prison records. There were in the Colorado State Hospital on Jan. 1, 1928, 2435 sufferers from mental disorder; admittances in 1927 numbered 487, as reported by the U. S. Department of Commerce. The two State training schools for mental defectives contained in addition, on Jan. 1, 1928, 333 inmates; admittances in the preceding year having been 38. The chief institutions maintained by the State in 1928 were: State Home for Dependent and Neglected Children, Denver; State Home and Training School for Mental Defectives, Ridge and Grand Junction; Industrial School for Girls, Morrison; Industrial School for Boys, Golden; State Reformatory, Buena Vista; State Penitentiary, Canon City, State

Hospital for the Insane, Pueblo; Soldiers' and Sailors' Home, Monte Vista; Industrial Workshop for the Blind, Denver; and the State Psychiatric Hospital.

POLITICAL AND OTHER EVENTS. Governor Adams facing difficulties early in 1928 in making State income fit with expenditure, overruled a proposal to call a special legislative session for the purpose of increasing the taxes. By retrenchment, it was announced in May, a saving of some \$640,000 had been effected in the State expenditures. The difficulty thus met originated in overappropriations on the part of the legislative session of 1927. A reported application of the Public Service Company of Colorado to the Federal authorities for permission to divert 300 feet a second from the water of the Arkansas River above the Royal Gorge brought forth opposition in March from local interests concerned with the preservation of the scenic features of the Gorge. The State Supreme Court in a decision of July 9, sustained an injunction to prevent the Mountain States Beet Growers' Marketing Association from interfering with unapproved farm sale of beets to the Great Western Sugar Company. The Marketing Association, operating under the marketing laws of the State, had attempted to bind its members to a form of sale contract covering their crop for several years in advance.

The long pipe line of the Colorado Interstate Gas Company to convey natural gas to Denver from Amarillo, Texas, was put in operation in the course of the summer. The city auditor of Denver made a report in April on the finances of the municipal water supply, indicating a heavy increase in operating expenses and in bonded indebtedness over the period 1920-1927. The city authorities negotiated for the lease of the water bore of the Moffat Tunnel for use in conveying a water supply.

ELECTION. The vote of the State in the National election of November 6 was: for the Republican candidates, Hoover and Curtis, 253,872; for Smith and Robinson, Democratic, 133,131. On the vote for governor the majority was reversed, William H. Adams, Democrat, being overwhelmingly reelected, over W. L. Boatright, Republican. With the exception of Governor Adams, the Republican presidential vote carried in the Republican State ticket. Three Republicans and one Democrat were elected to the United States House of Representatives, all being the existing incumbents save one Republican, who replaced a Democrat. To the State Senate were elected 20 Republicans and 15 Democrats. Amendments to the State Constitution, for issue of \$60,000,000 highway notes, for limiting voting power in school elections, and for creating an elective State Board for Education, failed of ratification by popular vote.

OFFICERS. Governor, William H. Adams; Lieutenant-Governor, George M. Corlett; Secretary of State, Charles M. Armstrong; Treasurer, Herbert C. Fairall (appointed November 10, to succeed Harry E. Mulnix, deceased); Auditor, William D. MacGinnis; Attorney-General, William L. Boatright; Superintendent of Public Instruction, Katherine L. Craig.

JUDICIARY. Supreme Court: Chief Justice, Hasslett P. Burke; Associate Justices, John Campbell, John H. Denison, Greeley W. Whitford, Hickman Walker, John T. Adams, Charles C. Butler.

COLORADO, UNIVERSITY OF. A coeducational State institution of higher education at Boulder, Colo., founded in 1876. The number of students enrolled for the autumn term of 1928 was 2990, and the summer quarter had a registration of 3437. There were 288 faculty members, exclusive of assistants. The total income for general maintenance, from State fees, tuition, etc., was estimated at approximately \$1,195,000, while approximately \$501,000, including fees, was received for operation of hospitals, and \$125,000 for new buildings. The library contained 183,175 volumes, 17,185 pamphlets, and 2570 maps. An annual gift of \$1000 was given to the medical library (Denison Memorial Library) by the Denison Foundation. President, George Norlin, Ph.D., LL.D.

COLORADO RIVER DEVELOPMENT. See UNITED STATES, under *Seventieth Congress, Second Session*.

COLORED METHODISTS. See METHODISTS, COLORED.

COLUMBIA UNIVERSITY. A non-sectarian institution for the higher education of men and women founded in 1745. At Morningside Heights, Broadway and 116th St., New York, are located: Columbia College (for undergraduate men); the professional schools of law, mines, engineering, chemistry, and architecture; the non-professional graduate faculties of political science, philosophy, and pure science; Barnard College (for undergraduate women); Teachers College, including the departments of education and practical arts; School of Journalism; School of Business; School of Library Service; and the University Library. The College of Physicians and Surgeons and the School of Dental and Oral Surgery are on West 168th Street, the College of Pharmacy on West 68th Street; Seth Low Junior College, in Brooklyn, N. Y., and St. Stephen's College, at Annandale-on-Hudson, N. Y. In addition, through university extension and the summer session, courses are offered for resident students at Morningside Heights, and other courses are offered at Camp Columbia, as well as at several extra-mural centres.

On the basis of the enrollment on Nov. 1, 1928, the total number of resident students for the year was estimated at 36,771, distributed as follows: Undergraduates, 3683, of whom 1950 were in Columbia College, 1125 in Barnard College, 400 in Seth Low Junior College, 113 in St. Stephen's College, and 95 in other schools; graduate and professional students, as follows: graduate faculties, 2950; law, 645; medicine, 425; mines, engineering, and chemistry, 215; architecture, 105; journalism, 160; business, 440; dental and oral surgery, 250; Teachers College, 5725; pharmacy, 681; optometry, 45; library service, 215; unclassified, 225; university extension, 9800. The grand total is exclusive of 2800 duplicate registrations. Non-resident students, 12,400 in number, were estimated as follows: in home-study courses, 9000; in special and extra-mural courses, 3400. There were 14,007 registered for the summer session of 1928.

The faculty and officers of administration in 1928 numbered 2714, of whom all except 37 were in active service. This number was distributed as follows: Professors, 318; associate professors, 121; assistant professors, 219; associates, 96; instructors, 378; lecturers, 66; assistants, 204; curators, 3; instructors, lec-

turers, and assistants in Teachers College, 217; instructors and lecturers in the College of Pharmacy, 25; instructors in extension and home study, not included above, 452; instructors in summer session, not included above, 520; officers of administration, 58.

Among the appointments of the year 1928-29 were: Professors Harold F. Clark (Education), Hans T. Clarke (Biological Chemistry), Leslie C. Dunn (Zoölogy), Earl B. McKinley (Bacteriology); Director of the School of Tropical Medicine), Edmund W. Sinnott (Botany), John M. Wheeler (Ophthalmology), Jorge del Toro (Tropical Surgery), John R. Clark (Education), Goodwin L. Foster (Biological Chemistry), Michael Heidelberger (Medicine), Dudley J. Morton (Anatomy), Francis W. O'Connor (Medicine), William M. Agar (Geology), Wilfred M. Copenhaven (Anatomy), Earl T. Engle (Anatomy), and Harry O. Veach (Physiology); the appointment as visiting professors for the year 1928-29 of Professors Louis Cazamian of the Sorbonne, Paris; Alfredo Colmo, Judge of the Court of Appeals, Buenos Aires, and President of the Instituto Cultural Argentino-Norte Americano; J. J. L. Duyvendak of the University of Leiden; Douglas B. Maggs of the University of Southern California; Robert E. Mathews of Ohio State University; and Payson J. Treat of Stanford University.

Important events of the year 1927-28 included: The establishment of the new schedule of salaries; the establishment in the Borough of Brooklyn of Seth Low Junior College; the affiliation of St. Stephen's College, Annandale-on-Hudson, with the University; a new agreement with Union Theological Seminary providing a closer and more effective institutional relationship; the dedication of the Casa Italiana; the removal of the College of Physicians and Surgeons and the School of Dental and Oral Surgery to the new buildings at the Medical Centre; the establishment of a Council for Research in the Humanities; the establishment of a new dental service clinic; and the reorganization of the programme of study in Columbia College.

During 1927-28 the University received gifts in money representing a total of \$5,546,667. The principal additions to general endowment came from the estate of Amos F. Eno, \$333,584; from the estate of Mary B. Pell, \$258,185; from the Alumni Fund Committee, \$38,000. The chief additions to special endowments were: From the estate of Stephen Whitney Phoenix of the Class of 1859, \$728,009; from an anonymous donor for scientific research in physics and physical chemistry, \$368,751; from the Association of the Alumni of the College of Physicians and Surgeons to establish the Francis Delafield Alumni Professorship Fund, \$119,022; from Mrs. Walter B. James for the James Research Fellowship Fund, \$25,000; from Mrs. Henry Evans for the Evans Fellowship Fund, \$30,000; from the estate of Stella Cooper Megrue, \$25,000; from the estate of Henry Koplik, for the Koplik Children's Scholarship Fund, \$15,000; from Professor and Mrs. Frederick S. Lee, to be added to the Lee Fund, \$10,000.

The gifts for buildings and grounds included those of the Carnegie Corporation for the new buildings at the Medical School, \$373,060; those of the General Education Board for the same purpose, \$250,000; that of Frederick W. Vanderbilt and Harold S. Vanderbilt, for the construc-

tion and equipment of the Vanderbilt Clinic, \$333,333; and those from a group of friends of the university for the construction of the Casa Italiana, \$315,000. Of gifts to income, the three largest were from alumni of the university, including the estate of F. Augustus Schermerhorn of the Class of 1868, a trustee from 1877 to 1908, \$904,135; the estate of Lenox Smith, Class of 1865, a trustee from 1883 to 1913, \$56,349; and from the Alumni Federation, \$18,500.

The capital endowment in 1928, excluding value of plant (including Barnard College, Teachers College, College of Pharmacy, and St. Stephen's College), was \$69,550,071; estimated total resources, as of June 3, 1928 (including Barnard College, Teachers College, and the College of Pharmacy), was \$124,415,474; annual budget for 1928-29 (including Barnard College, Teachers College, College of Pharmacy and St. Stephen's College), was \$13,829,105. The number of volumes in the library was 1,132,236. President, Nicholas Murray Butler, Ph.D., Hon. D., LL.D., D.Litt.

COLUMBUS, GEORGIA CENTENNIAL. See CELEBRATIONS.

COLVIN, GEORGE. American educator, died at Louisville, Ky., July 22. He was born at Willisburg, Ky., Sept. 7, 1875, and was graduated from Centre College in 1895. He was admitted to the bar in 1897. For three years he was in the employ of the Louisville, Ky., Title Company, and then became superintendent of schools at Springfield, Ky., 1900-20. From the latter year to 1926 he was State superintendent of education, and then was president of the University of Louisville until his death.

COMETS. See ASTRONOMY.

COMMISSION PLAN. See MUNICIPAL GOVERNMENT.

COMMODITY PRICES. See BUSINESS REVIEW; FINANCIAL REVIEW.

COMMONWEALTH FUND. See UNIVERSITIES AND COLLEGES.

COMORO ISLANDS. See MAYOTTE AND COMORO ISLANDS.

COMPENSATION LAWS. See WORKMEN'S COMPENSATION.

COMPTON, KATHERINE. See CARTON, RICHARD CLAUDE.

CONBOY, MRS. SARA AGNES. American Labor leader, died at Brooklyn, January 7. She was born at Boston, Mass., Apr. 3, 1870, and received a common-school education. She was elected secretary-treasurer of the United Textile Workers of America in October, 1915, and was the only woman representing labor at President Wilson's conference in 1918. She represented the American Federation of Labor at the British Trades Union Congress, held in Portsmouth, England, in 1920, being the only woman ever elected as such representative, and she was one of the four women selected by President Harding to take part in the unemployment conference held in Washington in 1921. Among the other positions held by Mrs. Conboy were those of member of the executive board of the National Committee on Prisons and Prison Labor; chairman of the advisory board on vocational training in the public schools of New York, and member of the New York State Housing Commission.

CONCERTS. See MUSIC.

CONCILIATION, INTERNATIONAL. See ARBITRATION, INTERNATIONAL.

CONGO, BELGIAN. A Belgian colony in Central Africa, formerly the Congo Free State,

which was annexed to Belgium in 1908. The boundaries were defined by declarations of August, 1885, and December, 1894, and by treaties with Germany, France, Great Britain, and Portugal. Area, estimated at 918,000 square miles; the native population is placed at 8,500,000 (Bantu). On Jan. 1, 1927, the white population numbered 18,169, of whom 11,898 were Belgians. The chief city and former capital is Boma; by a royal decree of 1923, the capital was transferred to Kinshasha, which was renamed Leopoldville. Other important towns are Elizabethville, Stanleyville, and Koquilhatville. Catholic and Protestant bodies carry on missionary work, the number of Catholic missionaries being 1076 and of Protestant, 616. In coöperation with the Government they supply means of education, and there are several educational institutions under direct government control, at the more important towns. In 1927, the Government grant for education to the missionaries amounted to 3,127,892 francs, while the total expenditure on education was 11,242,598 francs.

COMMERCE, FINANCE, ETC. Total imports for consumption during 1927 reached 649,585 metric tons valued at \$41,599,000, as compared with 631,584 tons valued at \$42,158,000 for the preceding year. Exports rose from 203,678 metric tons valued at \$23,775,000 in 1926 to 223,266 tons valued at \$29,336,000 in 1927. Exports of copper ore, lumber, cotton, sesame, beans, plantation rubber, raw hides, and coffee showed especially large percentage increases, while notable advances were also made in shipments of palm nuts, copper bars, rice, and corn. The only important decreases were in exports of copal, tin ore, wax, worked ivory, horns, and gold bullion. Imports from Belgium represented 36.7 per cent of the total volume and 54.8 per cent of the total value of arrivals, in each case slightly higher than in 1926. Exports to Belgium declined in relative importance, amounting to 46.6 per cent of the total quantity of outgoing shipments and 49.6 per cent of their total value. Exports to the United States amounted to 13,615 metric tons valued at \$1,275,000, and exceeded those to all other countries excepting contiguous African territories and Belgium. Belgian Congo imported from the United States 30,832 metric tons of merchandise valued at \$2,433,000. The United States was in third place (following Belgium and Rhodesia) as a supplier of imports to the Congo.

The budget for 1928 provided revenues of 521,563,585 francs and expenditures of 521,241,955 francs. The debt on Dec. 31, 1927, was 1,893,050,983 francs, of which 1,770,411,383 francs were consolidated debt and 122,639,600 francs floating debt. Steamers belonging to the Government ply on the Congo in its navigable section from its mouth to Matadi, a distance of 95 miles, and government and private companies supply a transport service on the upper Congo and its tributaries. There are over 1000 miles of navigable water between Stanley Pool and Stanley Falls, and above Stanley Falls there is another section navigable for about 585 miles. On Jan. 1, 1927, there were 1023 miles of railroad open to traffic and 8818 miles of road partly suitable to motor traffic. Governor-General, Lieutenant-General Tilkens, appointed Dec. 27, 1927.

CONGO, FRENCH. See FRENCH EQUATORIAL AFRICA.

CONGO FREE STATE. See CONGO, BELGIAN.

CONGREGATIONALISM. A religious de-

nomination founded in the United States by the Pilgrims at Plymouth, Mass., in 1620, under the leadership of Brewster, Bradford, and Winslow. The origin of this movement lay in the Separatist activity in England. The Puritans of Massachusetts Bay followed a similar tendency, and as a result the essential elements of Separatism and Puritanism were combined into Congregationalism. In this denomination each church holds the right to frame its own statement of belief, and the policy of the denomination as a whole represents adaptation to conditions rather than accord with a theory of church government. The National Council, by which the administrative affairs of the church are carried on, has no ecclesiastical authority, but includes ministerial and lay delegates elected by the State conferences and district associations. The National Council meets biennially, the session in 1927 having been held in May, at Omaha.

Statistics of the denomination for Jan. 1, 1928, showed 5548 churches, 5609 ministers, and a church membership of 928,558; there were 3085 young people's societies, with a membership of 188,047. The Sunday-school enrollment was 742,270. The total raised for all benevolences was \$4,442,491, and the home expenses of the church were \$22,056,818. The National Benevolence Societies of the denomination include the American Board of Commissioners for Foreign Missions and the Congregational Home Boards, consisting of the following corporations unified in their operations by the election of an identical Board of Directors for all: American Missionary Association, Congregational Home Missionary Society, Congregational Church Building Society, Congregational Board of Ministerial Relief, Congregational Sunday School Extension Society, and the Congregational Publishing Society. The Annuity Fund for Congregational Ministers provides a participating plan of retiring ministers.

The American Board of Commissioners for Foreign Missions is the oldest foreign missionary society in America, having been organized June 20, 1810. On Jan. 1, 1928, there were 17 missions under 12 different flags; the stations connected with these missions numbered 98 and the outstations 1665. The missionaries holding life appointments numbered 653 and included 55 ordained men, 67 unordained men, 207 wives and 224 single women. There were also 108 associates serving for shorter periods, bringing the total number of missionaries up to 761, and the native force of workers numbered 5743. Religious services were carried on in 2492 places, although there were only 773 organized churches, with 99,912, communicants. The total church constituency had increased from 284,903, in the previous year, to 305,761; the Sunday schools numbered 1493, theological seminaries and training schools 36, with an attendance of 1493 scholars, colleges 7, with 3527 students; secondary schools 83, and primary and elementary schools totaled 1226 with 68,083 pupils. The total enrollment in schools of all grades was 85,083. There were 30 hospitals and 65 dispensaries with a staff of 51 physicians and 26 foreign nurses. Total expenditures of the Board for the year ending Aug. 31, 1927, including Woman's Boards, were \$2,166,596. Due to the continued revolutionary disturbances in mission lands during the year many missionaries were forced to withdraw from their stations,

resulting in the passing of authority and responsibility for the conduct of the work from the mission, in the case of China, to the organized Chinese church. Mission stations in India, Turkey, and Mexico reported encouraging coöperation and support, while in countries less disturbed politically, as West Africa, South Africa, and Czechoslovakia, steady progress was made.

The field of the American Missionary Association extended to the Negroes, Indians, and Highlanders in the South and Southwest; Porto Ricans; and Orientals and Indians in the West; Mexicans and Hawaiians. Statistics of the Association show that in the year 1926-27 there were 236 churches; 11,254 members; 32 schools; and 7472 pupils. Expenditures during the same period amounted to \$1,216,476.26.

The Annuity Fund for Congregational Ministers was reported to have assets totaling \$4,132,841; the membership was 2384; and annuity payments amounted to \$133,923. The Church Building Society received \$305,090.82 in 1927 for current use, the contributions for church and parsonage building amounting to \$180,939.75, and repayments on church and parsonage loans to \$250,225.76. The Church Extension Board voted 208 church grants and loans, and 37 parsonage loans, amounting to \$533,543, and paid \$589,901.90 toward 121 new churches and 39 parsonages, leaving 139 applications for grants, church loans, parsonage loans, etc., which could not be provided for.

Among the 10 theological seminaries with which the denomination was affiliated were the following: Chicago Theological Seminary; Yale Divinity School; Hartford School of Religious Pedagogy; Oberlin College; and Pacific University. There were also 41 colleges with some historical relation to Congregationalism, although a number are now underdenominational.

The accompanying table, reprinted from the *Congregational Year Book* for 1927, gives statistics of international Congregationalism.

CONGREGATIONAL CHURCHES AND MEMBERS

Countries	Churches Chapels and Stations	Members of Churches	Members of Sunday Schools
Africa *	1,229	48,716	25,678
Australia and New Zealand	514	18,919	34,099
British Guiana *	45	4,300	3,986
Bulgaria *	42	1,273	2,352
Canada *	7,848	629,549	639,323
China *	1,068	34,196	19,417
Czechoslovakia *	145	3,500	1,362
England and Wales	4,576	454,447	591,421
India and Ceylon *	1,438	43,814	56,811
Ireland *	55	3,200	4,315
Jamaica	32	2,851	3,717
Japan *	104	28,493	21,602
Madagascar *	884	38,347	33,507
Mexico	32	834	1,042
Micronesia *	84	3,341	3,939
Newfoundland *	4	225	330
Papua *	134	4,040	6,605
Philippines *	72	3,694	8,023
Scotland	166	37,716	28,192
South Seas *	300	18,048	16,532
Spain *	12	331	550
Turkey and Syria *	61	3,228	6,246
United States	5,548	928,558	742,270
Total	23,893	2,309,105	2,240,319

* Includes reports of London Missionary Society and American Board.

* Repeated from last *Congregational Year Book*

* United Church. Comprises Presbyterian, Methodist and Congregational churches.

In June, 1928, a group of 1200 British Congregationalists visited Plymouth Rock, Mass., to "reconsecrate themselves to the same high and holy purposes for which their fathers had suffered." Boston, New York, Brooklyn, Providence, and other New England cities were visited during the course of their stay and in each place entertainment was provided by the members of the various Congregational churches in these cities.

The headquarters of the National Council are at 287 Fourth Avenue, New York. The officers of the National Council for 1927-29 included: Honorary Moderator, President Calvin Coolidge; Moderator, Dr. Ozora S. Davis, Chicago, Ill.; Associate Moderator, the Hon. William E. Sweet, Denver, Colo.; Secretary, the Rev. Charles E. Burton, New York; and Treasurer, Edwin G. Warner, New York. The Congregational Publishing Society maintains branches at 14 Beacon Street, Boston, Mass., and at 19 South LaSalle Street, Chicago, Ill.

CONGREGATIONAL METHODISTS. See **METHODISTS, CONGREGATIONAL.**

CONGRESS. See **UNITED STATES.**

CONNECTICUT. POPULATION. According to the Fourteenth Census the population of the State on Jan. 1, 1920, was 1,380,631. The estimated population on July 1, 1928, was 1,667,000. The capital is Hartford.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

<i>Crop</i>	<i>Year</i>	<i>Acreage</i>	<i>Prod. bu.</i>	<i>Value</i>
Hay	1928	364,000	593,000 *	\$10,942,000
	1927	370,000	538,000 *	11,592,000
Tobacco	1928	25,000	29,750,000 *	11,071,000
	1927	23,700	28,985,000 *	10,621,000
Potatoes	1928	17,000	2,210,000	1,989,000
	1927	15,000	1,635,000	2,698,000
Corn	1928	55,000	2,310,000	3,003,000
	1927	55,000	2,090,000	2,508,000
Apples	1928	.....	1,500,000	1,950,000
	1927	.....	1,045,000	1,776,000
Oats	1928	15,000	405,000	284,000
	1927	15,000	480,000	331,000

* tons, ^b pounds.

MINERAL PRODUCTION. The output of minerals in the State maintained its former general character, being confined chiefly to stone, sand and gravel, clay products, and lime. Clay products in 1926, the latest year on record, attained a value of \$3,291,298, as against \$2,509,727 in 1925. The stone industry was active, yielding 2,069,920 short tons in 1926, and in 1925, 1,830,210; in value, \$2,680,849 for 1926 and \$2,655,339 for 1925. Producers sold, in 1927, 53,000 short tons (estimated) of lime, as against 61,742 in 1926; the value being, for 1927, \$602,000 approximately, and for 1926, \$695,495. The total mineral production of the State in 1926 was \$7,695,341; in 1925, \$6,755,454.

FINANCE. State expenditures in the year ending June 30, 1927, as reported by the United States Department of Commerce, were: for maintenance and operation of governmental departments, \$20,100,613 (of which \$1,581,491 was for local education); for running public service enterprises, \$81,860; for interest on debt, \$656,865; for permanent improvements, \$9,050,580; total, \$29,889,918 (of which \$11,891,370 was for highways, \$4,101,020 being for maintenance and \$7,790,350 for construction). Revenues were \$32,-

658,116. Of these property and special taxes formed 25.2 per cent; department earnings and remuneration for officers' services, 9.8 per cent; license sales and gasoline taxation, 54.0 per cent. Property valuation was \$2,554,603,534; State taxes thereon were \$1,812,953. Net State funded debt on June 30, 1927, was \$3,078,148.

TRANSPORTATION. The total mileage of railroad line under operation on Jan. 1, 1928, was 967.78. During 1928 was built 0.49 mile of additional first track.

EDUCATION. The State made an interesting move in the treatment of difficult pupils in 1928 by establishing 18 psychological clinics under the Division of Special Education and Standards, for the observation and study of pupils offering special behavior problems. The school census of the State for the academic year 1927-28 was given as 378,048. There were enrolled in the public schools 307,560 pupils, of whom 266,210 were in elementary schools and 41,350 in high schools. Expenditures of the year for public-school education, exclusive of capital outlay, totaled \$25,587,119.04. Salaries of teachers averaged: in elementary grades, \$1577.80; in high schools, \$2029.56; for all schools, \$1659.97.

CHARITIES AND CORRECTIONS. The chief agency of the State Government in 1928 in the control of institutions for the care or custody of persons was the Department of Public Welfare, a statutory board created in 1921, consisting of five 4-year appointees. Under it were a Bureau of Child Welfare and a Bureau of Adult Welfare. Other boards operating separately were the Board for the Education of the Blind, Board of Pardons, and State Tuberculosis Commission. The Department had among its functions the duty to supervise and report upon penal and reformatory institutions, those for the insane and for the feeble-minded and epileptics, 33 public hospitals, 7 State sanatoria for the tubercular, town and county almshouses, homes for the aged, and institutions for child care. Among the State institutions were: Fitch's Home for Soldiers, and the Soldiers' Hospital, Noroton Heights; State Hospitals at Middletown, capacity 2867, and Norwich, 2250; State Farm for Inebriates, capacity 60; State Prison, Wethersfield; State Farm for Women, Niantic, 192 inmates; Connecticut School for Boys, Meriden, 427 inmates; Long Lane Farm (an industrial school for girls), Middletown, 231 inmates; Connecticut Reformatory, Cheshire, 295 inmates; Mansfield State Training School and Hospital for epileptics and the feeble-minded, capacity 800; State Tuberculosis Sanatoria at Cedarcrest, 170 patients; Meriden, 169; Norwich, 222; Laurel Heights, 160; Niantic (children), 59; and the Mystic Oral School for the Deaf, 108. Figures are for Jan. 1, 1928. There were at that date 4916 mental patients in the two State hospitals and 710 in the epileptic and feeble-minded institutions.

POLITICAL AND OTHER EVENTS. Important additions to the State lands, made by purchase subsequent to July, 1925, were reported in April to have brought the total area of State forest to more than 40,000 acres. The State law imposing a transfer tax on decedents' stocks and intangible property outside the State was upheld in a decision of the Federal Supreme Court in relation to the Robert B. Hirsch estate, involving a large interest in a New York partnership. The Olin Memorial Library at Wesleyan University, an \$800,000 structure donated in memory of

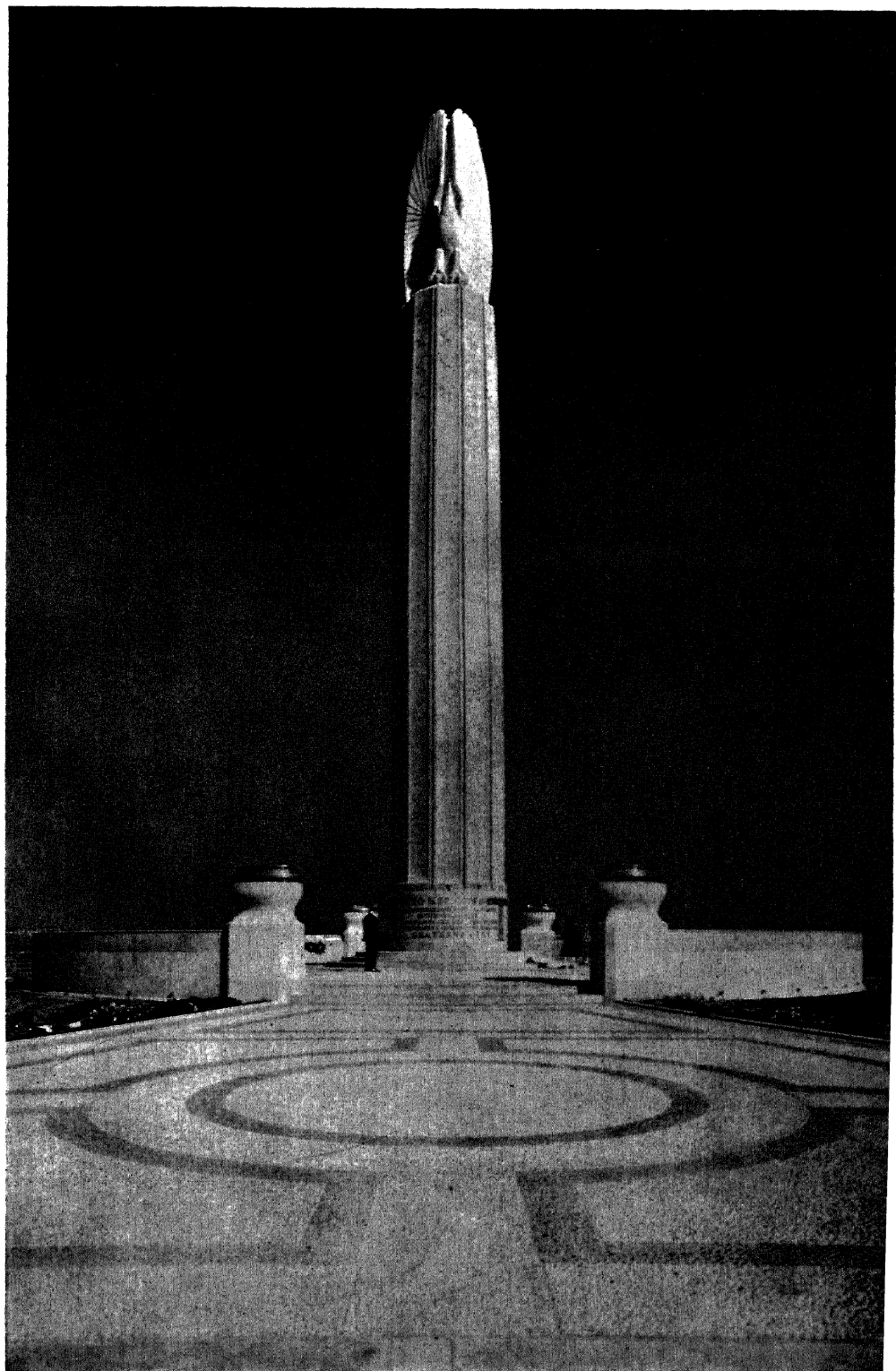


Photo by Richard Averill Smith

WAR MEMORIAL
NEW BRITAIN, CONNECTICUT
H. Van Buren Magonigle, Architect

Stephen B. Olin, was dedicated May 17. Suit brought by the State of Connecticut in the United States Supreme Court against the State of North Carolina, to recover about \$290,000 on repudiated bonds of the latter State, which had been donated to a State-owned Connecticut hospital, was withdrawn in May by Connecticut. At Groton, the State made arrangements for the purchase of land for an airport, from the Plant estate. Purchasers of Connecticut Valley tobacco announced early in the year a plan whereby they would purchase growers' crops in advance of the growing season, at a set price to the pound. A movement to preserve the Mark Twain residence at Hartford was set on foot in May.

ELECTION. In the presidential election of November 6, Hoover (Rep.) obtained 296,614 votes; Smith (Dem.) 252,040. The cities of Hartford, Bridgeport, Waterbury, and New Haven gave majorities for the Democratic ticket, but were overwhelmed by the predominant Republican vote elsewhere. Frederick C. Walcott, Republican, was elected United States Senator for the ensuing regular term, defeating Augustine Lonergan, Democrat. Governor John H. Trumbull was reelected, on the Republican State ticket, defeating the Democratic nominee, Charles G. Morris.

OFFICERS. Governor, John H. Trumbull; Secretary of State, Francis A. Pallotti; Treasurer, Ernest E. Rogers; Comptroller, F. M. Salmon; Attorney-General, Benjamin W. Alling.

JUDICIARY. G. W. Wheeler, Chief Justice, Supreme Court of Errors; W. M. Maltbie, F. D. Haines, G. E. Hinman, John W. Banks, Associate Judges.

CONOWINGO POWER PLANT. See DYNAMO-ELECTRIC MACHINERY.

CONSERVATION. See FORESTRY.

CONSUMERS' SOCIETIES. See COÖPERATION.

CONVERTERS, ELECTRICAL. See DYNAMO-ELECTRIC MACHINERY.

COOK, CAPTAIN JAMES, ANNIVERSARY. See CELEBRATIONS.

COOLBRITH, INA DONNA. American poet, died at Berkeley, Calif., February 29. She was born in Illinois in 1843. In early childhood she was taken across the overland trail by her parents. She attended the public schools of Los Angeles, Calif., and in 1874 became librarian at the Oakland, Calif., Public Library, where she remained until 1893. From 1897 to 1899 she was librarian of the Mercantile Library, San Francisco, and from 1899 to 1906 librarian of the Bohemian Club of the same city. She spent several years in study and work in New York. In early life she saw much of the mining camps of California, and her experiences were embodied in some of her poems. For a time she was associated with Bret Harte in editing the *Overland Monthly*. Miss Coolbrith was the last of the coterie of early San Francisco writers which included, besides Harte, such men as Mark Twain, Charles Warren Stoddard, and Joaquin Miller. She was called sometimes "The Sappho of the West," and her work gained for her the official title of "Poet Laureate of California," conferred on her by the legislature and the Governor in 1915. Her best-known poems are contained in two volumes, *A Perfect Day and Other Poems* (1884), and *The Singer of the Sea; Songs from the Golden Gate* (1895).

COOLIDGE, ARCHIBALD CARY. American educator, historian, and diplomat, died at Boston,

Mass., January 14. Born at Boston, Mar. 6, 1866, he was graduated from Harvard in 1887, and studied also at the University of Berlin, L'École des Sciences Politiques in Paris, and at Freiburg in Baden. He was acting secretary to the American legation at St. Petersburg, 1890-91, private secretary to his uncle, T. J. Coolidge, Minister to France, in 1892, and secretary to the Legation in Vienna in 1893. From that year until his death he was connected with Harvard University, but this connection was interrupted at times by public service. In 1893-99 he was instructor in history, from 1899 to 1903 assistant professor, and thereafter professor; in 1911 he became also director of the library of the university. In 1916 Harvard conferred on him the degree of LL.D. Professor Coolidge was a member of the Taft party to the Philippine Islands in 1905-06. Harvard lecturer at various French universities, including the Sorbonne, 1906-07, and American exchange professor at the University of Berlin, 1906-07. He was sent as special agent of the United States Department of State to Sweden and northern Russia in 1918, and in the following year he was head of the mission, attached to the peace conference, which spent five months at Vienna and three months at Paris. In 1921 he became a member of the American Relief Administration in Russia. Professor Coolidge was the author of *The United States as a World Power* (1908); and *The Origins of the Triple Alliance* (1917); and was a contributor to *The American Historical Review* and other publications, and editor of *Foreign Affairs*.

COOLIDGE DAM. See DAMS.

COÖPERATION. As has been noted before in the YEAR BOOK, the history of coöperation in the United States is not spectacular. Progress is to be reported annually, but the idea has not yet seized the imagination of the American people to nearly the same degree that it has European nations. There follows a tabulation of the sales and net profits of a group of the larger consumers' coöperatives. The *Monthly Labor Review* declares that among these should be numbered the students' coöperative societies of Princeton and Harvard Universities, each of which reports annually sales in excess of half a million dollars.

SALES AND NET PROFIT OF CERTAIN OF THE LARGER CONSUMERS' COÖPERATIVE SOCIETIES

<i>Society and location</i>	<i>Sales 1927</i>	<i>Net profit 1927</i>
Franklin Coöperative Creamery Association, Minneapolis, Minn.	\$3,341,740	\$67,499
Coöperative Central Exchange, Superior, Wis. (wholesale) ..	1,255,676	18,335
Soo Coöperative Mercantile Association, Sault Ste. Marie, Mich.	602,847	39,886
Coöperative Trading Co., Waukegan, Ill.	579,618	24,136
Consumers' Coöperative Services, New York City	530,156	34,611
Cloquet Coöperative Society, Cloquet, Minn.	516,278	16,980
Coöperative Trading Association, Brooklyn, N. Y.	428,121	11,730
Coöperative Bakers of Brownsville, Brooklyn, N. Y.	394,793	6,837
New Coöperative Co., Dillonvale, Ohio	372,199	11,216
United Coöperative Society, Maynard, Mass.	338,488	12,589
United Coöperative Society, Fitchburg, Mass.	332,746	10,949
Work People's Trading Co., Virginia, Minn.	316,877	11,226

AGRICULTURAL COÖPERATIVES. A survey made by the Bureau of Agricultural Economics for the year 1925 and published in 1928 found that there were in existence in the United States 10,803 agricultural coöperatives with a total of 2,700,000 members. The following States reported the largest membership: Minnesota, 217,400 (8.1 per cent of the total in the country); Kentucky, 194,700 (7.2 per cent); Iowa, 179,800 (6.7 per cent); Missouri, 170,600 (6.3 per cent); North Carolina, 139,900 (5.2 per cent); Illinois, 131,000 (4.8 per cent); Michigan, 128,300 (4.7 per cent); Wisconsin, 120,100 (4.4 per cent); Ohio, 115,300 (4.3 per cent); New York, 100,000 (3.7 per cent).

An example of the intensive degree to which some agricultural areas are organized on co-operative lines was revealed in a study made by the U. S. Department of Agriculture in two counties in Minnesota. In the four townships that were visited it was found that 68 per cent of the 404 farmers were members of coöperative associations. Of the total, 266 were buying and selling their products through coöperatives, 191 were members of coöperative creameries, 143 of livestock shipping associations, 87 of coöperative elevator companies, and 50 of coöperative oil associations. One-half of the farmers belonged to one association, 41 per cent belonged to two associations, 7.5 per cent belonged to three associations, and 1.1 per cent belonged to four associations.

That the Government's attitude toward agricultural coöperatives was one of continued friendliness was indicated in the speech of President Coolidge before the National Grange at Washington on November 16. Here he pointed out that the most successful method devised by the farmers themselves for meeting the problem of agricultural over-production was the creation of the coöperative society. The society was a "movement to unify all the agencies of production, distribution, and consumption so that they can function as a coördinated whole which will sell at the right place and at the right time. . . . It rests on the sound merchandising principle of taking the product and disposing of it in the most advantageous way that shrewd and orderly marketing affords. Such further assistance as is necessary to render this effort more effective through setting up a board for its administration, supplied with sufficient funds to demonstrate its soundness in its experimental stage, may well be provided by the National Government."

See also under **AGRICULTURE; AGRICULTURAL EXPERIMENT STATIONS; AGRICULTURE, U. S. DEPARTMENT OF, Coöperative Marketing.**

LABOR BANKS. There were, on June 30, 1927, 28 labor banks in the United States with a combined capitalization of \$7,437,500, combined deposits of \$98,165,834 and combined total resources of \$114,717,643. The most important of these was the Federation Bank and Trust Co. of New York which had total resources of \$21,168,585. The Amalgamated Bank of New York had total resources of \$11,209,688.

The other banks were the following:

Engineers National Bank of Cleveland; Telegraphers' National Bank of St. Louis; Labor Coöperative National Bank of Paterson, N. J.; Brotherhood of Railway Clerks National Bank, Cincinnati; Mt. Vernon Savings Bank, Washington; Labor National Bank of Newark; Engineers National Bank of Boston; Amalgamated Trust and Savings Bank of Chicago; Brotherhood Coöperative National Bank of Spokane; Brotherhood Coöperative National Bank of Tacoma;

Brotherhood Coöperative National Bank of Portland; Transportation Brotherhoods National Bank of Minneapolis; Labor National Bank of Jersey City; Brotherhood National Bank of San Francisco; People's Coöperative State Bank of Hammond, Ind.; American Bank of Toledo; Brotherhood Bank and Trust Co. of Seattle; Farmers' and Workmen's Savings Bank, Jackson, Mich.; Nottingham Savings and Bank Co., Cleveland; Hawkins County Bank, Rogersville, Tenn.; Labor National Bank, Great Falls, Mont.; United Labor Bank and Trust Co., Indianapolis; Gary Labor Bank, Gary, Ind.; Labor Bank and Trust Co., Houston; Labor National Bank of Three Falls, Mont.; Brotherhood State Bank, Spokane.

BUILDING AND LOAN ASSOCIATIONS. From June 30, 1926, to June 30, 1927, the number of building and loan associations increased by 274, the membership by 670,556, and the resources by \$844,458,644. There were 21 failures during the year. The report of the United States League of Local Building and Loan Associations indicated that the money market had been so easy during the year surveyed that societies were placed in that position where they had to use salesmanship to obtain borrowers. This was largely due to the very keen competition being offered by national banks, life insurance companies, etc. During the year 1926-27, there were 12,804 associations in the United States with a total membership of 11,336,261 persons and total assets of \$7,178,562,461. In Illinois there were 910 societies with total assets of \$388,097,831. In Maryland, there were 1210 societies with total assets of \$210,000,000. In Massachusetts, there were 221 societies with total assets of \$478,005,147. In New Jersey, there were 1536 societies with total assets of \$886,167,505. In New York, there were 313 societies with total assets of \$349,533,632. In Ohio, there were 827 societies with total assets of \$1,035,429,317. In Pennsylvania, there were 4427 societies with total assets of \$1,245,987,953.

CREDIT UNIONS. In the United States one of the most successful phases of the coöperative movement has been the development of credit unions. The *Monthly Labor Review* points out that credit unions among postal workers, started only in 1923, by April, 1928, already numbered 168 societies. These had a total of 19,098 members, a paid-in share capital of \$1,179,293, a total of \$1,201,023 loans outstanding, and a grand total of \$4,160,262 loans having been granted.

GASOLINE COÖPERATIVES. Mention has already been made of the growth of coöperatives for the purchase of gasoline and oil among the farmers of the Middle West. In the States of Illinois, Nebraska, and Minnesota these organizations appeared to be particularly popular. For instance, in Illinois during 1926-28 there were formed 19 farmers' coöperative oil stations of which 14 were banded together in a central purchasing unit called the Illinois Farm Supply Co. Similarly, in Nebraska a central organization called the Farmers' Union State Exchange was purchasing oil and gasoline for 14 local groups. In Minnesota, too, there was a central unit called the Minnesota Co-op Oil Co. In the eight months from its founding in March, 1927, to December, 1927, the parent society did business totaling \$257,654, selling its oil products to some 30 local coöperative societies.

FOREIGN ITEMS. In Canada there were reported 961 societies with a total membership of 455,793. The largest single group were the livestock co-operatives with 197 societies and 286,403 members. Consumers' societies totaled 21 with 7804 members while banks in Quebec totaled 122 with 33,279 members. During 1925 these banks made

loans of \$3,909,790. In *France*, the latest figures obtainable, i.e., those for 1924, showed that there were in existence 3648 societies with a membership of 2,152,702. These did business during the year for a value of 2,144,514,249 francs. In *Germany* the coöperatives continued to flourish. For the year 1926 the Central Union reported 1093 member societies with 3,197,751 members and a total business of 1,052,697,751 marks of which 240,549,392 marks represented the value of goods manufactured. Belonging to the wholesale society there were 888 coöperatives which did 294,173,971 marks' worth of business. In *Germany* more than 60 per cent of the people belonging to the coöperatives, unlike the members in the United States and Canada, are members of the working classes, while only 5.6 per cent are tradespeople and 3.3 per cent are farmers.

In *Great Britain* the reports show a similar steady progress. In 1927 sales totaled more than £200,000,000, and £22,000,000 was distributed as surplus. The British coöperatives are ever opening new fields for their activity. In 1926, for example, the Coöperative Wholesale made large loans to similar organizations in European countries for the purpose of permitting them "to effectively market their produce without exploitation." The coöperatives of Manchester and the surrounding country run the largest laundry in the world, while in London plans were under way for the construction of a 100-bed hotel. Figures for productive coöperatives show that in 1925 there were 42 such organizations making clothing, shoes, printing, and other wares with a total membership of 14,261 persons and sales aggregating £2,285,358.

Russia outdistanced all other countries and its great strides are a matter of only five years. Says one authority: "The coöperative movement plays a greater part in the business life and social and political education of the nation than in any other country." For example the consumer coöperatives serve 30 per cent of the trade of the country and include among their membership one-fourth of the peasantry, 60 per cent of all the trade unionists, and 75 per cent of the transport workers. The accompanying figures will be of interest.

found the prices of the retailers were 2.5 per cent higher and in neighborhoods where the retailers were to be found alone prices were 4.3 per cent higher. When it is considered that in 1927 the coöperatives also gave rebates of 3 per cent on sales it is obvious that the savings effected are considerable. In 1927 rebates on sales totaled 21,637,959 francs. During 1926-27 there were 55 consumers' societies and 25 productive societies affiliated with the union. The consumers' societies had a total membership of 298,119 persons, total sales of 677,143,921 francs, paid-in share capital of 9,665,148 francs, saving deposits of 223,604,164 francs, and paid out in rebates 21,637,959 francs.

COÖPERATION IN LATIN COUNTRIES. During the year there was published Charles Gide's *La coöperation dans les pays latins—Amérique Latine, Italie, Espagne, Roumanie*. In view of the leading rôle that the author had played in the coöperative movement, his observations merit extended attention. He points out that coöperation has met with phenomenal success in the northern countries, e.g., Great Britain, Germany, Russia, the Scandinavian countries, and has been only moderately successful in the southern countries, e.g., Spain, Italy, Portugal, Greece, South America, etc. In Italy there were 1,000,000 members of coöperative societies; in Rumania, 300,000; in Spain, 80,000; in Portugal, Greece, Bulgaria, Jugo-Slavia, 100,000 each. In the whole of Europe there were to be found 25,000,000 coöperators, or about 5.5 per cent of the total population. However, in Latin America, Spain, Italy, and Rumania, the coöperative population represents but 1.5 per cent of the total or one coöperator to every 15 or 16 persons (if families are included), whereas in Austria, Hungary, Switzerland, and England the ratio is one to every seven or eight inhabitants.

M. Gide attributes this state of affairs to unsettled political conditions. He says, about those "used to the spice of local political emotions and quarrels, coöperative activity appears tame, insipid; they disdain its modest elections, they lack interest in its peaceful works." The author points out that these strictures are applicable only to consumers' coöperatives. Productive coöperatives,

DEVELOPMENT OF COÖPERATIVE MOVEMENT IN RUSSIA
[Pound sterling at par = \$4.8665; exchange rate, about par]

Type of society	Number of societies	Number of members	Amount of business in—	
			1924-25	1925-26
Consumers' coöperatives	28,739	11,863,000	£400,846,560	£667,195,767
Agricultural coöperatives	59,500	7,000,000	123,656,080	224,550,264
Peasants' crafts coöperatives	13,000	756,000	43,386,243	107,619,047
Total	101,239	19,119,000	£567,888,883	£999,365,078

In 1927, in *Belgium*, there existed a total of 2228 coöperative associations, or an increase of 103 over the previous year. For the 1927 societies reporting, the following was their distribution: consumers' societies, 382; pharmacies, 14; productive societies, 524; coöperative labor societies, 38; savings and credit societies, 138; housing societies, 110; insurance, 55; marketing societies, 39; miscellaneous, 640. The Belgian Coöperative Unit, an organization of socialist societies made up of consumers and productive coöperatives, demonstrated that the prices of the coöperatives were considerably lower than those prevailing among private retailers. In the neighborhoods where both types of stores were to be

on the other hand, thrive in Italy, Spain, and Rumania. In Italy, agricultural labor associations, rural credit associations, associations of unskilled laborers who work on public developments, are prospering; Spain has its coöperative fishers' associations, etc., etc. But the consumers' societies have not succeeded because they are the most difficult of all. "The other reforms of coöperation are the primary school of coöperation, it is the superior form and in the evolution of coöperative forms it is generally the last to appear." See AGRICULTURAL EXTENSION WORK; AGRICULTURE.

COPLIN, WILLIAM MICHAEL LATE. American physician and leader in public hygiene, died at

Atlantic City, N. J., May 30. He was born at Clarksburg, W. Va., Nov. 1, 1864, and was educated at Mount Union College and the Jefferson Medical College, Philadelphia, Pa., receiving his medical degree from the latter institution in 1886. In 1896 he became professor of pathology and president of the faculty of the college, and was professor emeritus at the time of his death. From 1892 Dr. Coplin was pathologist to the Philadelphia Hospital. He was director of the department of public health and charities of Philadelphia, 1905-07, and medical director of the Jefferson Hospital, 1907-12. During the World War he served in the United States Army as head of a base hospital in France. He had an international reputation as an authority on hygiene and sanitation. Dr. Coplin wrote: *Manual of Pathology* (5th ed., 1911), and *Text-Book of Practical Hygiene* (two editions).

COPPER. In 1928 the outstanding feature of the copper industry, according to the U. S. Bureau of Mines, was the heavy domestic withdrawals made during the latter part of the year, which caused domestic withdrawals for the year to be the highest for all time, with the exception of 1918. The price of copper increased throughout the year from a monthly average of 13.96 cents a pound in January, to 15.9 cents a pound in November and approximately the same in December, according to the *American Metal Market*. Demand, followed by the highest prices that had been paid since April, 1923, brought forth a response from the mines in the form of largely increased production. Smelter production from domestic ores increased about 10 per cent during the year, and that this increase is largely owing to heavy production in the latter part of the year, was shown by the estimate of smelter production in December, 179,000,000 pounds, which was 27,000,000 pounds higher than the monthly average for the 11 months preceding. As it takes from two to three months for copper in ore mined to appear as refined copper, the increased mine production had not up to the end of the year caused as large an increase in refinery output as it had in smelter output. The increased mine production was not made soon enough to save the producers from drawing largely on their stocks of refined copper to satisfy consumption, and refined stocks were depleted during the year from 171,000,000 pounds at its beginning to estimated stocks of 95,000,000 pounds on December 31. The drop in imports of refined copper and the increase in exports caused a further depletion of refined stocks. Blister stocks also were decreased in 1928. See FINANCIAL REVIEW.

The output of recoverable copper by the mines in the United States in 1928 was about 905,500 short tons as compared with an output of 824,980 tons in 1927, an increase of about 10 per cent, according to the Bureau of Mines' figures.

There were increases in production in all of the more important copper-producing States due to the increase in the price of copper during the year. Production fell off in Alaska and California.

The smelter production of copper from domestic ores in 1928 as determined by the Bureau of Mines from reports of the smelters showing actual production for 11 months and estimated production for December, was 1,849,000,000 pounds, compared with 1,684,000,000 pounds in 1927. The 1928 production was 10 per cent higher than that of 1927, and was the largest peace-time production on record. The estimated smelter production from domestic ores for December as reported by the smelters was 179,000,000 pounds which is 27,000,000 pounds higher than the average for the 11 months preceding.

The production of new refined copper from domestic sources, determined in the same manner as smelter production, was about 1,763,000,000 pounds, compared with 1,719,000,000 pounds in 1927. In 1928 the production of new refined copper from domestic and foreign sources amounted to about 2,470,000,000 pounds, compared with 2,326,000,000 pounds in 1927, an increase of 144,000,000 pounds or 6 per cent. The production of secondary copper by primary refineries increased from 210,000,000 pounds to about 240,000,000 pounds in 1928, or 30,000,000 pounds, so that the total primary and secondary output of copper by the refineries was nearly 7 per cent higher in 1928 than in 1927, being about 2,710,000,000 pounds compared with 2,536,000,000 pounds.

The imports of unmanufactured copper during 1928, according to the Bureau of Foreign and Domestic Commerce, amounted to 787,073,640 pounds, a monthly rate of 65,590,000 pounds compared with 718,322,990 pounds for the entire year 1927, a monthly rate of 60,000,000 pounds.

The exports of metallic copper during the calendar year 1928 amounted to 1,123,747,090 pounds compared with 1,076,729,246 pounds exported during the year 1927. In 1928, 948,309,890 pounds of refined copper in ingots, bars, rods, and other forms, were exported. Of this quantity Germany received 206,549,919 pounds, the highest amount, the United Kingdom was next with 185,816,840 pounds, and France was third with 171,440,871 pounds. In the year 1927 Germany received the largest amount, 221,841,647 pounds, the United Kingdom was next with 182,565,499 pounds, and France was third with 111,957,106 pounds.

Refineries reported that at the end of 1928 approximately 95,000,000 pounds of refined copper were in stock, a decrease from 171,000,000 pounds at the end of 1927. It was estimated that stocks of blister copper at the smelters, in transit to refineries, and at refineries, and materials in

NEW REFINED COPPER WITHDRAWN FROM TOTAL YEAR'S SUPPLY ON DOMESTIC ACCOUNT, 1927-1928, IN POUNDS

	1927	1928
Refinery production of new copper from domestic sources.....	1,719,000,000	1,763,000,000
Refinery production of new copper from foreign sources.....	607,000,000	707,000,000
Imports of refined copper (December, 1928, estimated)	103,000,000	70,000,000
Stocks of new refined copper on January 1	146,000,000	171,000,000
	2,575,000,000	2,711,000,000
Exports of refined copper (ingots, bars, rods, or other forms, December, 1928, estimated)	981,000,000	1,028,000,000
Stocks, December 31	171,000,000	95,000,000
	1,152,000,000	1,123,000,000
Total withdrawn on domestic account	1,423,000,000	1,588,000,000

process of refining, would be about 378,000,000 pounds on December 31, compared with 401,000,000 pounds at the end of 1927, a decrease of 23,000,000 pounds. Therefore, a decrease of 99,000,000 pounds in total smelter and refinery stocks was indicated.

The quantity of new refined copper withdrawn on domestic account during the year was about 1,588,000,000 pounds, compared with 1,423,000,000 pounds in 1927, an increase of 165,000,000 pounds or approximately 12 per cent. Domestic withdrawals in 1928 were the highest ever recorded with the exception of those in 1928. The method of calculating domestic withdrawals is shown in the table on page 188.

According to the American Bureau of Metal Statistics, the world's production of copper in 1928 was estimated at 1,916,471 tons, making a world record and compared with the 1927 production of 1,674,818 tons, the previous record. This authority gave the United States production for 1928 as 1,060,094 tons, a high record that could be compared with 971,123 tons in 1926, the previous record, and 847,419 tons in 1927. Chile was the next largest producer with an estimated production of some 300,000 metric tons, a high record. See METALLURGY.

COPYRIGHT. Registrations for the fiscal year 1927-28, according to the report of the United States Registrar of Copyrights, numbered 193,914, as compared with 184,000 for the preceding year. Of these 77,081 were classed as books, but included pamphlets, leaflets, and contributions to periodicals, those printed in the United States numbering 70,972, those printed abroad in a foreign language, 4405, while the remainder, 1704, were English books registered for ad interim copyright. The chief classes of the remaining registrations, in order of numerical importance, were: Periodicals, 47,364 numbers; musical compositions, 26,897; prints and pictorial illustrations, 14,272; photographs, 7968; dramatic or dramatico-musical compositions, 4473; works of art, including models or designs, 3152; maps, 2862; drawings or plastic works of a scientific or technical character, 1705; motion-picture photoplays, 1288; and motion pictures not photoplays, 1016. The renewals numbered 5447 as compared with 4686 in the preceding year. The fees paid during the year amounted to \$195,167.65. The total number of articles deposited during the fiscal year ended June 30, 1928, was 310,209.

The gross receipts of the Registrar's office for the fiscal year were \$201,054.49; the total expenditure for salaries, \$182,959.53; and for supplies, \$1,495.64. The year's business showed a substantial increase over that of 1927, which was the largest in the history of the office up to that time.

Copyright legislation was enacted, May 23, 1928, to increase the copyright fee for registration of all published works to \$2. This fee was formerly \$1. The fee for an unpublished work remains at \$1. Fees for most other copyright services have been correspondingly increased. It was stated by the United States Registrar of Copyrights that one copyright proclamation had been issued during the year, namely, in behalf of citizens of Rumania, May 14, 1928, including protection with respect to the mechanical reproduction of music, under Sec. 1 (e) of the Copyright Act of 1909.

CORAL REEFS. See GEOLOGY.

CORCORAN ART GALLERY. See ART EXHIBITIONS; ART MUSEUMS.

CORINTH. GREECE, EARTHQUAKE AT. See EARTHQUAKES.

CORN. The production of corn in 1928 of 15 countries reporting to the International Institute of Agriculture, Rome, was estimated at 3,224,801,000 bushels as compared with 3,281,590,000 bushels in 1927. This represented an increase of 0.9 per cent in 1928 over the yield in 1927 and a decrease of 1.7 per cent from the average yield for the five years 1922-26. The area devoted to the crop in 1928 was reported as 128,234,000 acres, or 3.3 per cent above the 1928 acreage and 2.5 per cent above that of the five-year period.

The 1928 production in some of the more important European corn producing countries was reported as follows: Rumania, 99,874,000 bushels; Kingdom of the Serbs, Croats, and Slovenes, 81,214,000 bushels; Italy, 62,285,000 bushels; Hungary, 43,325,000 bushels; Spain, 23,877,000 bushels; and Bulgaria, 18,293,000 bushels. Owing to dry weather in central European countries, the European crop was nearly 100,000,000 bushels below the crop of 1927 and 185,000,000 bushels below the five-year average of 1923-27. For the crop year 1927-28, the following yields were reported by the leading corn growing countries of the southern hemisphere: Argentina, 306,000,000 bushels; Union of South Africa, 69,000,000 bushels; and Australia 10,000,000 bushels. Brazil for the three years 1924-26 produced an average yearly yield of 162,600,000 bushels.

The production of Canada in 1928 was reported as 4,692,000 bushels on 139,000 acres, which was over 10 per cent more than the production in 1927 but nearly 60 per cent below the five-year average of 1922-26. Largely owing to the damage caused by the corn borer in the Province of Ontario, the Canadian acreage the past two years was reduced to about one-half the area grown in earlier years. The average annual yield for the five-year period was 11,556,000 bushels.

The corn production of the United States, according to estimates published by the Department of Agriculture on Dec. 14, 1928, was 2,839,959,000 bushels on 100,761,000 acres, the rate per acre being 28.2 bushels. In 1927 the yield was 2,763,093,000 bushels, the area 98,393,000 acres and the average yield per acre 28.1 bushels. On the basis of the average farm price Dec. 1, 1928, which was 75.1 cents per bushel, the total value of the crop was \$2,132,991,000 as against \$1,997,759,000 in 1927 when the corresponding price was 72.3 cents per bushel. The highest-producing States and their yields in 1928 were as follows: Iowa, 476,012,000 bushels; Illinois, 367,488,000 bushels; Nebraska, 212,701,000 bushels; Missouri, 181,540,000 bushels; Kansas, 179,118,000 bushels; Indiana, 161,322,000 bushels; Minnesota, 143,115,000 bushels; and Ohio, 136,725,000 bushels. All other States reported yields of less than 100,000,000 bushels.

The following States reported the highest acreages: Iowa, 11,174,000 acres; Illinois, 9,570,000 acres; Nebraska, 8,937,000 acres; Kansas, 6,634,000 acres; Missouri, 6,260,000 acres; Texas, 4,722,000 acres; Indiana, 4,583,000 acres; and South Dakota 4,469,000 acres. The average yield per acre ranged from 10.5 bushels in Georgia to 46 bushels in Idaho. In the leading States above mentioned the range in average yield per acre was from 23.8 bushels in Nebraska to 42.6 bushels

in Iowa. The eastern Corn Belt States showed a much larger production of corn in 1928 than in 1927, while the cotton States showed a marked reduction. The average farm price per bushel in the different States on Dec. 1, 1928, ranged from 61 cents in North Dakota to \$1.35 in Rhode Island. In only 20 States was the price a dollar or higher. The range in the eight highest-producing States was from 62 cents to 76 cents per bushel.

A report on the utilization of the corn crop of 1927 in the United States, made by the Department of Agriculture, indicated that 2,320,343,000 bushels were produced for grain, 30,312,000 tons for silage, and 11,055,000 acres were used for hogging down, grazing, and forage. Approximately 84 per cent of the acreage was devoted to grain production, 4 per cent to silage production, and 11 per cent to grazing and other purposes. The results of another study made by the department indicated, on the basis of reports from 4778 farms, that the average cost of production in 1927 in the United States was 70 cents per bushel of ear corn. A comparison of production costs for the six years 1922-27 showed that the annual cost of producing an acre of corn varied from \$23.01 in 1922 to \$24.97 in 1925 and the cost per bushel from 66 cents in 1922 to 84 cents in 1924. In the West North Central and Western States, where the yields were relatively good in 1927, the cost of production was 11 cents and 9 cents less than in 1926; and in the East North Central and South Central States, with yields lower than in 1926, the cost per bushel was 7 cents higher.

The international market situation in the fall of 1928, in view of the reduced crop in Europe, the relatively high prices for Argentine corn and the low stocks of old corn on hand seemed to indicate fair prices in the United States. The stock of corn on farms in the United States Nov. 1, 1928, was only 53,939,000 bushels, or 1.9 per cent of the total crop and the lowest since 1917. During the fiscal year ended June 30, 1928, the United States exported 18,374,000 bushels of corn, 259,000 barrels of cornmeal and 7,240,000 pounds of corn products for table use. The imports during the same period amounted to 5,463,000 bushels.

Research work was continued during the year by the Department of Agriculture, the agricultural experimental states, and other agencies to provide a better and greater utilization of farm waste materials, including those of the corn crop. An estimate of the supply of farm wastes, made in this connection, placed the annual production of corn stalks in the United States at 100,000,000 tons and of corn cobs at 20,000,000 tons. Farmers located in the areas invaded by the European corn borer, especially in Ohio and Michigan, are modifying their methods of corn growing and utilization, in addition to clearing up their fields to keep the pest in check. The extra labor involved in the control of the borer tends to change cropping systems and methods and in many instances to reduce the acreage. See ENTOMOLOGY, ECONOMIC.

The national corn-husking championship in 1928 was won by Walter Olson of Illinois, who husked 26.62 bushels in 80 minutes. As announced by the College of Agriculture, Ohio State University, Ira Martin, an Ohio farmer, broke his own three-year record as world champion corn grower by producing in 1928, 1762 bushels on 10

acres as compared with 1686.6 bushels in 1926, his previous highest yield.

CORN BORER, EUROPEAN. See AGRICULTURAL EXTENSION WORK; AGRICULTURE; CORN; ENTOMOLOGY, ECONOMIC.

CORNELL UNIVERSITY. A non-sectarian institution for the higher education of men and women at Ithaca, N. Y.; founded in 1865. There were 5387 students enrolled in the autumn session of 1928, distributed as follows: Graduate school, 602; college of arts and sciences, 1901; law, 189; medicine, 257; architecture, 190; engineering, 1007; veterinary medicine, 134; agriculture, 625; home economics, 482. Of these students 1299 were women. For the summer session the registration was 2150. The faculty, composed of 1106 members, had 288 professors, 202 assistant professors, 13 lecturers, 386 instructors, and 217 assistants. The productive funds on June 30, 1928, were \$21,230,391. The income applicable to current expenses of the fiscal year was approximately \$7,000,000, including \$2,038,000 of State, and \$335,000 of Federal, appropriations. Gifts amounting to \$4,034,500 were received in the year 1927-28. The lands and buildings were valued at \$10,576,000 and the equipment at \$4,030,800. The library contained 780,000 volumes.

Appointments to the faculty included those of Madison Bentley of the University of Illinois, who succeeded the late E. B. Titchener in the Sage professorship of psychology, and Mortimer W. Raynor and William L. Russell as professors of psychiatry in the medical college (New York City); Prof. T. F. Tout of the University of Manchester was the Messenger lecturer on the Evolution of Civilization, while the George Fisher Baker non-resident lecturers in chemistry were Prof. George Barger of Edinburgh and Prof. Hans Pringsheim of Berlin. The faculty lost by death the following professors: T. F. Crane, Romance languages, emeritus; I. P. Roberts, agriculture, emeritus; N. M. Shaffer, surgery, emeritus; F. S. Meara, medicine; and J. G. Pertsch, Jr., electrical engineering.

Building construction during the year included progress on the new \$2,000,000 women's residential halls, and some progress toward the erection of the Cornell war memorial group of men's dormitories; a new plant industry building was started; a new bridge over Fall Creek Gorge was erected; and two new bells for the Cornell chimes were installed. An appropriation of \$70,294 by the Heckscher Foundation for Research at Cornell University, and approved by the Board of Trustees, provided for 42 separate research projects to be conducted during 1928-29. The funds were to be devoted to researches in the natural sciences, particularly in chemistry and physics, including a coordinated attack on problems involved in radiation. Twenty-six tuition scholarships were awarded to students in the Cornell Law School for 1928-29, 15 of which furnished free tuition and the others half the cost of tuition. President of the University, Livingston Farrand, LL.D.

CORONA. See ASTRONOMY.

CORSON, OSCAR TAYLOR. American educator, lecturer and author, died at Columbus, Ohio, April 14. He was born near Camden, Ohio, May 3, 1857, and studied at the Ohio Wesleyan University. After teaching in country schools, 1875-78, and serving as principal of high schools

and superintendent of schools at Camden, Granville, and Cambridge, Ohio, he became, in 1892, State commissioner of common schools of Ohio. He remained in that office until 1898. In the meantime, in 1895, he had become editor of *The Ohio Educational Monthly*. He held the editorship 23 years. Dr. Corson, who received the degree of LL.D. from Wooster University in 1907, devoted his later years to lecturing and writing on education. In 1898 he was elected president of the Ohio State Teachers' Association, and in 1900 president of the National Education Association. He wrote: *Ohio State School Reports* (6 vols., 1892-98) and *Our Public Schools*.

COSMIC RAYS. See PHYSICS.

COSTA RICA. kōs'ta rēkă. A republic of Central America lying between Nicaragua and Panama, and bounded by the Caribbean Sea on the east and the Pacific Ocean on the west. Capital, San José.

AREA AND POPULATION. The area is estimated at 23,000 square miles. On May 11, 1927, for the first time in 35 years, a general population census was begun in Costa Rica, almost 800 persons being employed in the work. The last general population census made in 1892 showed the population of Costa Rica at the time to be 243,205. Official reports of the 1927 census published in the Spring of 1928 placed the total population at 471,524.

In 1926 the movement of population was: Births, 21,889; deaths, 10,813; marriages, 3705. In the same year the immigrants numbered 6402 and the emigrants, 5894. The populations of the larger cities according to the census of 1927 were as follows: San José, 50,580; Alajuela, 8496; Cartago, 14,883; Heredia, 7631; Liberia, 3161; Limón, 15,624; and Puntarenas, 7790.

EDUCATION. Primary instruction is free and compulsory, and the elementary schools are under local councils, but subventioned by the central Government. In 1926 there were 468 elementary schools open, with 1437 teachers and 42,031 pupils enrolled. The average attendance was 38,099. For secondary instruction there are at San José a lyceum for boys with 500 pupils and a college for girls with 472 pupils. The normal school at Heredia had 343 students. There are two colleges located at Cartago and Alajuela. There are also professional schools of pharmacy, law, medicine, and dentistry.

PRODUCTION. The chief occupation in the country is agriculture, although there are large areas not yet cleared that contain valuable cabinet woods. Coffee and bananas are the principal agricultural products. Cacao and sugar, once of considerable value, are playing an ever-decreasing part in the economic life of the country. The coffee exports in 1927 amounted to 16,153,980 kilos and in the same year 7,853,000 bunches of bananas were exported. The volume of banana exports reached its peak in 1913 and has steadily decreased since that time, owing to the Panama disease and the abandonment of exhausted lands. Gold and silver mining are also important industries of the country, being carried on on the Pacific coast. There are also deposits of manganese ore near the Pacific.

COMMERCE. Exports in 1927 were valued at 75,233,331 colones and imports at 65,243,136 colones, thus giving a considerable balance in favor of national exports. The imports reached the largest amount yet recorded, showing an increase of about 9,939,000 colones over those of

1926. The weight of exports was next to that of 1925, being 10,666,085 kilos, in addition to 14,279 head of cattle. The latter figure evidenced considerable increase—8190 head—over cattle exports in 1926. The United States supplied 57.6 per cent of the 1927 imports and Germany 18.7 per cent.

FINANCE. The Government of Costa Rica reported an increase in almost all classes of revenue for the year 1927, the total receipts being 30,584,123 colones as against budget estimates of 25,680,454 colones. The sources of revenue were: Custom house receipts, 16,187,155 colones; liquor tax, 5,178,840; income from National Railway, 2,563,879; revenue from banana trade, 306,032; other sources, 6,348,216. The expenditures totaled 23,319,189 colones, as against budget estimates of 23,694,641. A satisfactory surplus was therefore recorded. According to data submitted by the President in his annual message to Congress at the opening session of 1928, the public debt of Costa Rica on Dec. 31, 1927, amounted to 80,047,942 colones. This figure showed a reduction in the public debt of 7,465,184 colones over the total for Jan. 1, 1924.

COMMUNICATIONS. In 1926 there entered the ports of the Republic 679 ships of 1,304,313 tons, and cleared 676 ships of 1,303,231 tons. The length of railways was 413 miles of which 81 miles were State owned. In 1926 there were 2174 miles of roads partially suitable for motor traffic. In 1925 there were 2189 miles of telegraph wire and 2173 telephone instruments in use. In 1927 there were 1480 automobiles registered.

GOVERNMENT. The executive power is vested in a president who is elected for four years and who carries on his administration through seven secretaries of state appointed by him and responsible to him; legislative power in a chamber of representatives called the Constitutional Congress with 43 deputies, elected for four years, one-half retiring every two years. Voting for president, deputies, and municipal officers is secret, direct, and free. President at the beginning of 1928, Don Ricardo Jiménez, elected on Dec. 7, 1923; assumed office, May 8, 1924, for a period of four years. He was succeeded on May 8, 1928 by Cleto González Víquez, who was elected on Feb. 12, 1928, for the term 1928-32. On June 27, 1928, Congress approved a measure, which was later signed by the President, providing for the creation of a department of labor and social welfare, which shall have as its principal functions the following: "The preparation of a labor code setting forth regulations for labor contracts, savings and pension plans, organization of the labor office, labor associations, the housing of laborers, and conciliatory and arbitral proceedings; the organization of a service for the inspection of mines and industries, labor in general, industrial and professional instruction, and insurance and social welfare; the inspection and the execution of labor and social welfare laws; and the foundation and organization of an institute of social studies."

HISTORY. On February 12 Costa Rica held a presidential election, the two candidates being Cleto González Víquez of the National Union party and Carlos María Jiménez who was nominated by the Republicans. Señor Víquez was elected and assumed for the second time the duties of President on May 8. The new President

was born in 1858 and was educated to follow the legal profession. In the important posts of member of Congress and as Minister of Finance, Foreign Affairs, Promotion, and the Interior, he had been a valuable factor in the achievement of important legislative and administrative reforms. He served as President for the term 1906-10. Dr. Manuel Castro Quesada presented his credentials as Minister from Costa Rica to the United States on October 8.

For COSTA RICA AND MONROE DOCTRINE, see LEAGUE OF NATIONS.

COST OF LIVING. See STATISTICS.

COTTON. The Crop Reporting Board of the U. S. Department of Agriculture on Dec. 8, 1928, estimated the cotton crop of the United States for the year at 14,373,000 bales, an increase of 1,418,000 bales over the crop of 1927, and of 852,000 over the 5-year average, 1922-26. The average yield of lint per acre was estimated at 151.8 pounds, a slight decrease from the 5-year period. About 47,000,000 acres were planted to cotton in 1928, and after considerable abandonment, due to various causes, 45,326,000 acres were left for harvest. The farm value of the lint was estimated at \$1,291,589,000 and that of the seed at \$231,933,000, making the estimated total value of the crop \$1,523,512,000. On Sept. 12, 1928, *Commerce and Finance* issued an estimate of the cotton crop of the United States for 1928 as 14,152,000 bales. This followed a government estimate on September 1 of 14,439,000 bales. *Tattersall's Cotton Trade Review* for Dec. 19, 1928, estimated the hold-over of American cotton at 5,100,000 bales. This with the estimated crop of 14,373,000 bales would make a world's supply of American cotton of about 19,500,000 bales, with an estimated consumption of 14,900,000 bales.

In practically every important cotton-producing country, the area planted to cotton was about 7.5 per cent greater than in 1927, when 68,761,000 acres were planted to that crop. In many countries there were crop losses due to various causes, and it was not expected that the total crop would be greatly in excess of that of 1927. The estimated crop of India for 1928 was about 5,500,000 bales and of Egypt, 1,490,000 bales, or 21,413,000 bales for the three leading cotton-producing countries.

The U. S. Bureau of the Census estimated the world's production of commercial cotton in 1927 at 23,370,000 bales. The principal producing countries and their crops were reported by the International Institute of Agriculture at Rome as follows: United States, 12,789,000; India, 4,586,000; Egypt, 1,252,000; and Union of Soviet Republics, 983,000 bales. Anglo-Egyptian Sudan is reported to have produced 128,000, Uganda, 112,000; Brazil, 492,000; Mexico, 156,000; and Korea, 143,000 bales. The Bureau of the Census reported the crop of the United States for 1927 as 12,956,000 bales.

The accompanying table shows, by States, the cotton crop of the United States for 1927, as reported by the Bureau of the Census, the estimated crop for 1928, and the quantity reported ginned to Dec. 13, 1928:

In the accompanying table, under the ginning report, there are included 559,741 round bales that are counted as half bales. In the figures given for the estimated crop of Arizona, 22,332

States	Crop, 1927	Estimated	Reported
		Crop, 1928	Ginned, December 13, 1928
	500-lb. bales	500-lb. bales	Running bales
United States . . .	12,950,473	14,373,000	13,148,411
Alabama	1,192,262	1,090,000	1,058,696
Arizona	91,589	134,000	107,657
Arkansas	999,657	1,215,000	1,073,380
California	91,177	155,000	130,616
Florida	16,496	20,000	19,641
Georgia	1,099,568	1,020,000	1,008,925
Louisiana	547,437	685,000	675,035
Mississippi	1,355,098	1,470,000	1,392,842
Missouri	114,125	146,000	106,617
New Mexico	65,249	70,000	63,982
North Carolina	860,876	840,000	800,202
Oklahoma	1,036,606	1,180,000	1,046,532
South Carolina	729,942	725,000	711,438
Tennessee	358,755	420,000	358,095
Texas	4,354,621	5,150,000	4,551,341
Virginia	30,432	44,000	39,999
All others	6,583	9,000	3,513

bales of American-Egyptian cotton are included. The estimated crop of American-Egyptian cotton, practically all of which is grown in Arizona, is 29,000 bales. The crop of Lower California, which is usually marketed through California, is estimated at 83,000 bales, which are not included in the totals.

During the cotton year which ended July 31, 1928, there were crushed by oil mills in the United States 4,653,663 tons of cottonseed. Among the products derived from the seed were: 876,498 bales of lint; 1,319,946 tons of hulls; 2,093,127 tons of oil meal and cake; and 1,476,535,672 pounds of oil; besides a certain amount of other products.

Exports of cotton and lint for the year ended July 31, 1928, amounted to 7,733,177 bales. The consumption of domestic cotton by mills in the United States for the same period was 6,832,689 bales. The principal exports were to: United Kingdom, 1,430,539; Germany, 2,093,849; France, 895,682; Italy, 690,095; other European countries, 1,233,472; and Japan, 959,474 bales. During the same period there were imported from Egypt, 201,856; Peru, 23,319; China, 62,888; Mexico, 22,844; and British India, 20,663 bales. Of the cotton used by American mills, by far the greatest amount was consumed in mills in the cotton States, 5,113,999 bales, as contrasted with 1,435,947, in New England and 282,743 bales in all other States. Of the 36,374,000 spindles in the United States, 30,596,840 were active in November, 17,906,874 of which were located in the cotton-growing States, 11,395,480 in New England, and 1,294,846 in the other States. The percentage of idle spindles was greatest for New England and the average number of hours per spindle was likewise lowest.

Due to cold weather and excessive rains over much of the cotton area of the United States in the spring of 1928, planting was greatly delayed and in many regions extensive replanting was necessary. Drought affected the crop in parts of Texas and Oklahoma and boll-weevil damage was generally more severe than for several years past. These and other factors were responsible for a considerable abandonment, and while the area planted to cotton in 1928 was greater by 11.4 per cent than in 1927, the area harvested was about 4 per cent below that of the record crop of 1926.

The extension of cotton growing in the plateau region of northwestern Texas continued to

threaten the profitable production in some of the more humid regions. Extensive areas suited to the crop, large fields that permit machine cultivation, mechanical methods of harvesting the crop, and freedom from boll-weevil injury have favored cotton growing in this region. Low rainfall in the plateau is a hazard for cotton production, but the moisture requirement of the crop has been found less than in some lower elevations. Thirteen counties in northwestern Texas produced more than 150,000 bales in 1927 that were not reported as growing cotton in 1922. Many adjacent counties have greatly increased their production since the new methods have come into use.

The pink bollworm, which had been eradicated from areas in Louisiana and eastern Texas (YEAR BOOK, 1918, p. 160), was discovered in December, 1927, in west-central Texas near the western extension of continuous cotton culture. Quarantines were immediately established and eradication measures were undertaken for the control of this pest. Congress appropriated \$5,000,000 for putting in effect eradication methods which include the prohibition of growing cotton in the infested areas. For 1928 Texas must assume one-half the cost of losses due to the establishment of cotton-free zones.

An analysis of data on the mill consumption of cotton has shown that the United States produces too much of its crop that is very short staple and not enough middling or strict middling to meet the demand. Studies were made in Georgia and in an area in southwestern Oklahoma and adjacent Texas, and it was found that 78 per cent of the Georgia crop of 1927 was $\frac{7}{8}$ -inch or less in length and about $2\frac{1}{2}$ per cent of the entire crop was untenderable by reason of being $\frac{13}{16}$ inch or less. In the Oklahoma-Texas area 44 per cent of crop was $\frac{7}{8}$ -inch or less and 18 per cent was untenderable as being $\frac{13}{16}$ inch or less. In all of the studies middling and superior grades were found well represented, and in the Oklahoma-Texas area 11 per cent of the crop was $1\frac{1}{2}$ -inch staple. This was believed to indicate the possibility of producing better staple at little or no increase in cost. In many regions quantity rather than quality production is preferred, and the problem was to determine the combination of yield and length of staple that will give the best return to the grower. Congress provided for reports on supplies of cotton by grade and staple. This would furnish mills with information as to sources where superior fibre can be obtained and ultimately it should bring about better prices to the grower.

The cotton industry in Great Britain continued to be very unsatisfactory. Of about 38,000,000 spindles which used American cotton, only about 65 per cent were in full operation during the year. The British Cotton Growing Association, the Empire Cotton Growing Corporation, and other agencies were continuing their efforts to increase cotton production within the British Empire and thus become less dependent on the United States. In 1918-19 the cotton production of the Empire, exclusive of India, was 84,522 bales. This was gradually increased to 431,438 bales in 1925-26. The crop of 1926-27 was reduced to 361,318 bales by reason of low prices, unfavorable weather, lack of selected seed, etc. The principal producing countries and their crops for 1926-27 were: Anglo-Egyptian Sudan, 148,

118; Nigeria, 27,464; Uganda, 131,728; and Union of South Africa, 10,242 bales.

The Cotton Industry Act, which levied a tax of about 12 cents on every bale of cotton consumed by British mills, expired in July, 1928. Mills representing more than 80 per cent of the spindles in Great Britain voted in favor of a continuation of the act, and a bill which provided for a levy of 6 cents per bale was passed by the House of Commons on April 27. Under the original act, the Empire Cotton Growing Corporation was created and it was quite active in fostering research, transportation facilities, marketing, financing plantations, and other operations in connection with cotton production within the British Empire.

The Indian Cotton Cess Act of 1923, which levied a tax of 4 annas (about 8 cents), was amended in 1926 to a levy of 2 annas on every bale of cotton exported or consumed in mills in India. The funds derived under this Act are turned over to the Indian Central Committee for its work in cotton marketing, statistical, agricultural, and technological research on cotton and in the training of research workers. Considerable progress was reported by the Committee. Marketing conditions were improved and cotton crop forecasts were extended to include a number of additional provinces. It was believed that the crop data thus reported were much more accurate than in the past.

Progress was made in the improvement of Indian cottons and a beginning made in establishing grades for the more important varieties grown.

In Egypt, the Government continued to limit the area to be planted to cotton, and to supervise the management of the crop, its marketing, etc. Templeton, who had studied for five years the matter of ratooning cotton in Egypt, found some decided advantages for this method over annual planting in that country. While blooming begins about the same time for each crop, the curve of abundant blooming is in favor of the ratooned plants. The maximum of effective blooming of the ratooned plants was earlier and the crop was advanced by about six weeks, both of which are factors that are of great advantage under pink bollworm conditions as they occur in Egypt. Higher yields and less bollworm infestation were observed in most places, and there was no decrease in the quality of the line due to ratooning. Cost of production was materially reduced and pure-line strains were more readily maintained where ratooning was adopted. Important differences were found necessary in the practices adopted for irrigating ratooned and annually planted cotton. The Egyptian Government was reported to be preparing for the establishment of cotton mills to supply local demands for cloth.

Owing to the limited demand for Sea Island cotton, experiments were in progress in Fiji with various types of kidney cottons from New Guinea and two or three have been found promising. The quality of the fibre was said to be better than American middling and the crop does not require the care that is necessary for Sea Island. Practically all the Sea Island cotton produced in 1928 was grown in the West Indies, and the exports from the British West Indies from Jan. 1 to Oct. 31, 1928, were about 2700 bales.

COTTON BOLL WEEVIL. See COTTON; ENTOMOLOGY, ECONOMIC.

COTTONSEED. See COTTON.

COTTON TEXTILE STRIKE. See **STRIKES** AND **LOCKOUTS**.

COULTER, kōl'tēr, JOHN MERLE. American botanist and educator, died at Yonkers, N. Y., December 23. He was born at Ningpo, China, Nov. 20, 1851; graduated from Hanover College in 1870; and worked in the Rocky Mountains as botanist on the U. S. Geological Survey, 1872-73. Appointed professor of natural sciences in 1874, he remained at Hanover until 1879, when he was made professor of biology at Wabash College. Indiana University elected him president, and professor of botany in 1891, and two years later he accepted the presidency of Lake Forest University. Transferring to the University of Chicago in 1896, as professor and head of the botany department, he remained at that institution until 1925, when he became adviser at the Boyce Thompson Institute of Plant Research, at Yonkers, a post which he retained until his death. Dr. Coulter was also principal of the Bay View Summer University, 1893-96, and of the Winona Summer School, 1895-98. He was awarded Ph.D. degrees by Hanover in 1882 and by Indiana University in 1884. Besides being a member of several European and American scientific societies, he was a fellow of the American Academy of Arts and Sciences, general secretary of the American Association for the Advancement of Science in 1901, and president in 1918, and president of the Botanical Society of America, 1897-98, while he served on the National Research Council from 1923 until his death. In addition to his research and educational work, Dr. Coulter lectured frequently, being particularly interested in explaining the harmony between religion and science. Having aided in the foundation of the *Botanical Gazette* in 1875, he served as editor for many years, contributing to it and other periodicals. He supervised the botany department in the first (1903) and second (1914) editions of the *NEW INTERNATIONAL ENCYCLOPEDIA*, and wrote the following books: *Manual of Rocky Mountain Botany* (1885, rev. ed. 1909); *Manual of Texan Botany* (1891); *Plant Relations* (1899, 3d ed. rev., 1910); *Plant Structures* (1899, 2d ed., 1904); *Plant Studies* (1902, 2d ed., 1904); *Morphology of Gymnosperms*, with Charles J. Chamberlain (1901); *Morphology of Angiosperms*, with Chamberlain (1903); *A Text-Book of Botany* (1906); *Elementary Studies in Botany* (1913); *Fundamentals of Plant Breeding* (1914); *Evolution in Sex Plants* (1914); and *Plant Genetics* (1918).

COUNCIL-MANAGER PLAN. See **MUNICIPAL GOVERNMENT**.

COURTNEY, kōrt'ni, WILLIAM LEONARD. English author, editor, and critic, died November 1. He was born at Poona, India, Jan. 5, 1850, and after attending Somersetshire College, Bath, he entered University College, Oxford, in 1868, where he won scholastic honors, being elected Fellow of Merton College in 1872. He became headmaster of Somersetshire College the following year, but returned to Oxford in 1876, as fellow and philosophy tutor, at New College. While at the university he stimulated others to share his own interest in the stage, and to increase the prestige of the dramatic society by forming the "New Theatre" to replace the "Vic." He himself acted in productions at various colleges. Having contributed to the *Fortnightly* for several years, Courtney gave up teaching in 1890 and moved

to London in order to apply himself to the more congenial profession of journalism. He was first employed on the staff of the *Daily Telegraph*, later editing the paper until December, 1924. He also was made editor of *Murray's Magazine*, and of the *Fortnightly Review* in 1894, but had resigned from both positions at the time of his death. Being interested in publishing, he became director of Chapman & Hall. His dramatic and literary criticisms, which appeared for many years in the *Daily Telegraph*, secured his reputation as an authoritative critic. In addition, he wrote numerous topical articles and published a number of books, including: *Studies on Philosophy* (1882); *Constructive Ethics* (1886); *Studies New and Old* (1888); *Life of John Stuart Mill* (1889); *The Idea of Tragedy* (1900); *The Development of Maeterlinck* (1904); *The Feminine Note in Fiction* (1904); *The Literary Man's Bible* (1907); *Rosemary's Letter Book* (1909); *In Search of Egeria* (1911); *The Soul of a Suffragette* (1913); *The Literary Man's New Testament* (1915); *Old Saws and Modern Instances* (1918); *The Passing Hour* (1925); and *The Bedside Bible* (1926). Several of his plays were produced in London, notably: *Kit Marlowe* (1893); and *Undine* (1902). He was honored with the LL.D. degree by the University of St. Andrews during his service at Oxford.

COURT TENNIS. See **RACQUETS**.

COVINGTON, HARRY FRANKLIN. American educator; died at Snow Hill, Md., July 16. He was born at Snow Hill, Apr. 6, 1870. He was graduated from Princeton University in 1892, becoming in the following year assistant in oratory. From 1898 to 1904 he was assistant professor of oratory, and from 1904 to 1911 assistant professor of English. In 1911 he became professor of public speaking and debate. He was a member of the National Association of Teachers of Speech and of the Eastern Public Speaking Conference, and associate editor of *The American Journal of Public Speaking* and of the quarterly *Journal of Speech Education*. In 1918 he published *The Fundamentals of Debate*.

COWS. See **DAIRYING**; **LIVESTOCK**.

CRANE, FRANK, American journalist and clergyman, died at Nice, France, November 5. He was born at Urbana, Ill., May 12, 1861, and attended Illinois Wesleyan University. Having been ordained into the Methodist Episcopal ministry in 1882, he preached in various parishes serving as pastor of the Trinity and the Hyde Park Methodist Episcopal churches of Chicago, from 1896 to 1903. He joined the Congregational Church in 1904, becoming pastor of the Union Congregational Church, of Worcester, Mass., where he preached until he retired from the ministry in 1909. He then lectured and commenced contributing short daily sermons to newspapers. He wrote for the George Matthew Adams Service in 1914, and subsequently his articles were published through "The Associated Newspapers." Joining the McClure Syndicate in 1923, he continued his daily contributions of cheerful philosophy which were read by approximately 20,000,000 persons. Dr. Crane was at one time editor of the *Current Opinion*. He received the D.D. degree in 1894 from the Nebraska Wesleyan University. Many of Dr. Crane's newspaper articles were collected into book form, filling more than forty volumes, among the most important being: *The Religion of To-mor-*

row (1899); *Vision* (1907); *The Song of the Infinite* (1909); *Human Confessions* (1911); *God and Democracy* (1911); *Lame and Lovely* (1912); *Foot Notes to Life* (1913); *War and World Government* (1915); *Just Human* (1915); *Adventures in Common Sense* (1916); *The Looking Glass* (1917); *Christmas and the Year Round* (1917); *400 Four-Minute Essays* (10 vols., 1919); *The Crane Classics* (10 vols., 1920); *Why I Am a Christian* (1924); and *Everyday Wisdom* (10 vols., 1927).

CRANE, WILLIAM HENRY. American actor, died at Hollywood, Calif., March 7. He was born at Leicester, Mass., Apr. 30, 1845, and began his stage career, one of the longest in the history of the American theatre, as a boy singer at 18. He remained in opera eleven years, during which time his talents as a comedian manifested themselves strongly. His first engagement in the spoken drama was as a member of the Holley Stock Company, in Chicago, of which he became the leading comedian. Then, in 1877, he went to New York, and won immediate popularity in *Our Boarding House*. One of his fellow actors in the company was Stuart Robson, and the two formed an association that lasted until 1889. They played together in *Our Boarding House*, as the two Dromios in Shakespeare's *Comedy of Errors*, in Boucicault's *Forbidden Fruit*, and in *Our Bachelors*. They accompanied John McCullough on a tour of California that was a personal, artistic, and financial success.

Robson and Crane's greatest popularity was achieved in *The Henrietta*, but when the two parted company, in entire friendship, Crane went on to still greater public liking in *The Senator*, a powerful drama dealing with American public life. Then, in the decade from 1889 to 1899 he produced twelve plays by American authors, in addition to some other works. For three years he played the part of David Harum in a dramatization of the novel of that name, and afterwards appeared in *The Spenders*, *Father and the Boys*, a revised version of *The Henrietta*, and an all-star revival of *The Rivals*. In the last-named play his fellow actors included John Drew, Julia Marlowe, Francis Wilson, Nat Goodwin, E. M. Holland, Joseph Holland, and Robert Taber.

After passing his sixtieth birthday, Mr. Crane gave notable performances in *She Stoops to Conquer*, *Father and the Boys*, *United States Minister Bedloe*, *The Senator Keeps House*, *The Fool of Fortune*, and *The New Henrietta*. For a brief period he appeared in vaudeville, but for ten years preceding his death he lived in retirement in California. Much of his time was given to the writing of a book of reminiscences, *Footprints and Echoes*, published not long before his death.

CREAM. See DAIRYING.

CREDIT. See BANKS AND BANKING; BUSINESS REVIEW; FINANCIAL REVIEW.

CREDIT UNIONS. See COÖPERATION.

CRETE. An island in the Mediterranean Sea, ceded to Greece after Aug. 10, 1913. Area, 3327 square miles; population at the census of 1920, 110,746. Capital, Canea, with a population of 37,425, in 1920.

CRICKET. Cricket enthusiasts of Great Britain were treated to an unusual profusion of three-figure innings in 1928, there being a total of 414, or 105 in excess of the former record. Herbert Sutcliffe, of Yorkshire, E. H. Hendren,

of Middlesex, and C. P. Mead, of Hampshire, all passed the hundred mark on thirteen occasions.

International competition was afforded by the visit to the United States of two teams of West-Indian cricketers. A Bermuda combination played a series of eight games at New York and Philadelphia, winning six and drawing two. Barbados and other islands sent a team which made the most creditable record of twenty-one victories and five draws. The championships of both the New York and the New Jersey cricket associations and the Metropolitan District Cricket League were won by the Brooklyn Cricket Club.

CRIME. PSYCHIATRY AND CRIME. It was generally being recognized that out of the welter of sensational and useless discussion that had attended the periodical discovery of the "crime wave" in the United States two important facts had emerged, viz., that nothing of crime is known statistically, and that the mental factors of crime had been overlooked too long. Mention has been made under this head in the previous YEAR BOOK of the machinery that the State of Massachusetts had created for the handling of criminals by psychiatrists. This State in May, 1928, was the seat of an important congress when the Conference on Mental Factors in Crime met in Boston under the auspices of the Massachusetts Commission on Probation and the Massachusetts Society for Mental Hygiene. How forward had become the attitude of the officials of the State may be seen from the statement of the commissioner of correction that "psychiatrists have narrowed the field of responsibility and shown us the failure of our old assumptions with respect to the punishment of certain offenders."

Already this science had helped penology in the classification of the treatment of criminals i.e., which are to be put on probation, which to be put in institutions for mental defectives, which are to be specially educated in the institutions, which are to be treated as disciplinary problems. Another speaker pointed out that of 1168 courts in the country from which he received replies only 110 reported some regular psychiatric service or 9.4 per cent of the total. Out of the 259 penal institutions that reported, 29 had full-time psychiatrists on their staffs and 64 had part-time service, making almost 36 per cent for those reporting.

Prof. Harry Elmer Barnes, in his address, denied that psychiatry had no quarrel with the criminal law, but on the contrary insisted that the judicial machinery was opposed to a scientific approach to human behavior and that the public still refused to believe that "crime is just as much a medical problem as insanity." Other speakers pointed out that intelligent lawyers were willing to avail themselves of all the aid that medicine and sociology could offer; that there was need for a social self-audit of crime with particular attention being paid to studies of the effectiveness of different kinds of peno-correctional treatment and follow-ups of persons treated by the methods of modern penology. While the conference refused to go on record as advocating any single set of reforms, and, in fact, showed that marked divergences of opinion could be presented with the utmost reasonableness, it was apparent that it had served an important function in once more calling the attention of the lay public to a point of view up to recently treated with disdain.

Chief Judge Benjamin N. Cardozo of the New York Court of Appeals lent the great prestige of his name to the view that the penal code needed rewriting with particular reference to insanity in crime and to the law of homicide, in an address delivered before the New York Academy of Medicine in November. He declared that the work of bio-chemists, behaviorists, psychiatrists, and penologists must transform the system of punishment and that the death penalty would seem to the next generation "an anachronism too discordant to be suffered, mocking with grim reproach all our clamorous professions of the sanctity of life." He said further: "Adjustment of some sort there must be if we are to fulfill our duty to defective fellow-beings. . . . The sin, in truth, is ours, the sin of a penal system that leaves the victim to his fate when the course he is going is written plainly in the files of the courts and the stigma of mind and body." He called upon physicians to add their researches to that of the bar to draw a distinction between types of homicide, with particular reference to the weight to be given to insanity. There was urgent need for the exploration of "the dark mystery of crime, the mystery even darker, of the criminal himself in all the deep recesses of thought and will and body."

The same vital question was touched upon in a report issued earlier in the year by the National Crime Commission entitled, "Juries and Insanity Pleas." The report pointed out the futility of expecting lay juries to pass competently on pleas of insanity and referred with commendation to the Massachusetts and Colorado methods of entrusting the task to a commission of experts in mental diseases. The report recommended that the question of insanity of the defendant be passed upon before the case be submitted for trial. The YEAR BOOK has had occasion before to refer to the method employed in the State of Massachusetts. In Colorado, according to the report, a similar procedure was meeting with success. There, a plea of insanity in homicide resulted in the confinement of the defendant to the State hospital for mental diseases for observation. Upon the presentation of the findings of the experts the court decided whether the defendant was to be tried on the insanity issue or on the indictment. It was generally agreed that the present situation was hopeless not only because of the ignorance of such matters on the part of a lay jury but equally because the jury was thrown into confusion by the conflicting testimony of so-called alienists.

AMERICAN BAR ASSOCIATION. The president of the American Bar Association, in the presentation of his annual report to that body at Seattle in July, declared bluntly that at the centre of the crime situation was the bootlegger. Silas H. Strawn attributed the increase in crime to the following factors: 1. The development of hard roads and automobiles, making getaways easy. 2. Increased wealth, making purchase of automobiles and firearms possible. 3. Organized crime so that criminals can support politicians and buy protection. 4. Delay in the apprehension of criminals and the meting out of justice. 5. Indifference of citizens to their duties as jurymen, etc. 6. Unrestricted sale of firearms. To Prohibition, Mr. Strawn paid the following compliment: "Crime surveys show that crimes of

violence . . . committed largely by bootleggers and beer-runners, have increased to an alarming extent." The same general conclusion was arrived at by another speaker before the convention, A. V. Lashy of St. Louis, chief of the Association's section on Criminal Law and Criminology. Mr. Lashy gave the following results of his investigation into the crime situation, basing his conclusions on a symposium he had conducted: 1. Crime was being committed by professionals. 2. In cities of 100,000 and over, the criminal elements had not increased as a result of Prohibition. 3. In some of the large cities, criminal gangs were financed from profits in bootlegging. 4. Often the profits from bootlegging were used to corrupt public officials. See BAR ASSOCIATION, AMERICAN.

PHILADELPHIA. Philadelphia, during the year, proceeded to give an excellent example of how the police authorities were corrupted by bootleggers. Opening with the charges of the district attorney that a whisky ring had made \$10,000,000 in 1927 and that many police officials had been bribed, events began to move with the utmost rapidity. A grand jury, sitting on the prosecutor's charges, heard evidence to the effect that 11 murders could be traced directly to the operations of the whisky gang; that 13,000 "speakeasies" existed in the city; that a single distilling firm had diverted to bootleg sources 350,000 gallons of alcohol, etc. The grand jury, after 10 weeks of investigating, presented its recommendations on October 29. It called for the dismissal of 18 captains and 3 inspectors, representing nearly one-half of the commanders in the Philadelphia Police Bureau, on the ground that they "were unfit to hold public office." Of these men the jury found that "the money received and handled by them was either all or substantially all dishonestly acquired." These 21 men, according to the grand jury, had banked \$800,000 in addition to securities and real estate owned by them. On November 2, a Philadelphia court imposed prison terms and fines on a Republican ward leader and two police captains and three district detectives who had pleaded guilty to extortion, bribery, and conspiracy to extort money from saloon keepers.

NATIONAL CRIME COMMISSION. A subcommittee of the National Crime Commission, in a statement made public in March, reported: 1. That crime was a safe business. 2. That few arrests were being made in proportion to the crimes committed. 3. That the police were woefully inefficient, an important factor being the lack of intelligence in the supervisory branches. 4. That the sheriff's office was an anachronism. 5. That politics influence the police. 6. That prosecuting attorneys had too great power and not enough responsibility to their public. Other findings also enumerated a minor judiciary that was poor in character, lax bail methods, and the lack of criminal statistics. To prove its point ament the fewness of arrests the committee cited the case of Baltimore where, for burglaries committed, only 21 per cent of arrests were made and for these only one-half were convicted. Against this record was to be placed that of Canada where there were arrests for 84 per cent of indictable offenses and where convictions totaled 75 per cent of the arrests. The commission laid all these troubles at the door of the inadequate police forces. It cited the case of the

police of Cleveland who, a few years previously had been examined by the army intelligence tests. These tests established that only 3 per cent of the men were in the first grade and that only 41 per cent were of average intelligence or above. A large proportion of the remainder belonged in the moron class. Other parts of the commission's report cited the oft-repeated criminal statistics of England and Wales to prove how much more debauched were American cities.

It was refreshing to observe signs of recalcitrancy on the part of the American press. The following criticisms of the commission's report are taken from the *Literary Digest's* review: 1. Comparisons with England are misleading because it has a homogeneous population; it has few immigrants; it makes little use of the automobile, while in the United States automobiles are easy to steal for the getaway; it is a country of little distances; it is an island and its ports of exit can be easily sealed; its criminal courts function more speedily, more harshly and with fewer appeals. 2. It cannot be proved that our police are of inferior intelligence for data cited are several years old; the army tests do not measure intelligence; in every large city police applicants must pass stiff civil service examinations. 3. It is foolish to quote figures showing the low number of arrests for crimes committed for, obviously, each crime does not represent one criminal. A criminal continues committing his crimes until he is apprehended and put out of the way.

In February, another statement from the same source put the value of loot disposed of annually by "fences," as receivers of stolen goods are known, at \$500,000,000. Newton D. Baker, chairman of the commission, who made the announcement, reported that the solitary burglar was disappearing and that he was being replaced by crime associations who found it easy to operate because they could easily dispose of loot. The fence depended upon his ability to maintain a warehouse and upon the laxity of the laws. Because stolen goods were being shipped over the country, Mr. Baker felt that the fence could be reached by the Federal Government through its power to regulate interstate commerce. With this in view, the Commission drafted a bill for introduction before Congress making receivers or transmitters of stolen goods liable to a fine of \$5000 or a sentence of two years in prison or both. The National Crime Commission pointed out that while it had consistently advocated State rather than Federal legislation for the suppression and reduction of crime, it believed that the fence could be reached only through National legislation, because the offense was rarely confined to one State and because the interstate activities of thieves, receivers of stolen goods, and their allies made it impossible to build up a complete case against the criminal.

STATISTICS OF MURDERS. The YEAR BOOK has contained before reports of the investigations of Dr. Frederick L. Hoffman into the homicide rate in the United States. For the year 1927, Dr. Hoffman found that a total of 12,000 murders had been committed, making a rate of 101 per million of the population. During the year in question, the rate increased in 51 cities out of the 122 for which it was possible to collect statistics. The highest murder rates were in the following cities: Memphis, 89.3 per 100,000

population; Birmingham, Ala., 63; Charlotte, N. C., 55.5; Jacksonville, Fla., 54; Atlanta, Ga., 43.4; Miami, Fla., 40; East St. Louis, Ill., 39.7. With these extraordinarily high rates are to be compared New York's rate of 6.1 and Philadelphia's 8.4. Chicago's rate of 13.3 was greater than that for the whole country though it was a decided improvement over the rate of 1926 which had been 16.7. Boston's rate was 3.9.

Dr. Hoffman contrasts the American cities with the situation in Moscow where the homicide rate in 1925 was 4.5 and in 1918, which he calls the worst period in the recent history of Russia, Moscow's rate was only 8.2. As usual, the writer's observations are worthy of serious attention. Dr. Hoffman points out that there is no correlation between the enforcement of the death penalty and the number of murders committed annually. He says: "A study of the facts cannot but convince one of the precariousness of the enforcement of the death penalty and its far-fetched relation to the repression of homicidal crimes." Dr. Hoffman found in New York State one execution to every 40 homicidal deaths. It is his belief that the ease with which firearms may be procured, and the great number of times that murderers have been able to cheat the law by suicide, even when under the custody of the law authorities, are important reasons for the great homicidal rate in this country. Dr. Hoffman, like other modern students of crime, places no reliance in the death penalty as a deterrent.

The following are additional reasons for the high murder rate: murder is becoming more difficult of detection; the abuse of the pardoning power; the cumbersome and antiquated judicial machinery. It is refreshing to see that Dr. Hoffman appears slightly skeptical as to the immediate results to attend the many crime investigations current during 1928 in the country. He says: "The national crime commission and the local crime commissions have published voluminous reports, but the problem remains much the same. Charges have been made that our police are unintelligent and that our police administration lacks efficiency, but it is probably as good as that of any other country in the world. The true cause of our crime situation is to be found in the changing character of the American people, for every element of the nation is represented in the long list of murders, from youth to old age, men and women, black and white, native and foreign, rich and poor."

NEW YORK STATE. The New York State Crime Commission, whose activities have been referred to frequently in the YEAR BOOK, in making public the report of its subcommission on statistics, indicated that New York State was going to take the lead in the collection and publication of crime statistics. Said the statement of the subcommission's chairman: As a result of the commission's work we have this year written upon the statute books amendments to the existing law to improve in a very great degree the system of obtaining criminal statistics. While some things yet remain to be done, we have progressed in that respect further than any other State in the Union. The report presented figures to indicate that the presence of the Baumes Laws on the statute books had caused a drop in the major crimes committed in the State. The figures for the City of New York were studied for 1925, 1926, and 1927. For the last year the figures

for murder and manslaughter, assault, and robbery were lower than for the two preceding years. Note these figures:

	<i>Murder and Manslaughter</i>	<i>Assault and Robbery</i>	<i>Burglary</i>
1925	308	1483	4103
1926	289	1173	3373
1927	278	951	3380

The report devotes a good deal of attention to the "fourth offender" law which went into effect July 1, 1926. From Jan. 1, 1927 to Jan. 12, 1928, 65 charges of "fourth offender" were made. Of this number, 17 were tried and sentenced to life imprisonment, 3 were found guilty of the felony charge in the arrest and were being investigated, 14 were permitted to plead guilty to misdemeanors and were sentenced to the city penitentiary or workhouse, 2 were tried for felony, found guilty of a misdemeanor, and punished for such, 23 were found not guilty and discharged or dismissed, and 6 were delivered over to the police authorities.

In June the Baumes Laws were upheld by the New York State Court of Appeals, when it found that trial courts had no discretion to permit a second offender to escape the special penalties for such classes of criminals. The decision arose out of the action of a county judge in permitting a second offender to plead guilty to a minor charge of petty larceny.

The State Crime Commission, late in November, announced the results of its hearings on Governor Smith's proposal for a sentencing board. (See 1927 YEAR BOOK.) Two counter-suggestions had emerged. The first provided for the creation of a "court of re-sentence" in each judicial district to which would come all first offenders and those felons not liable under the Baumes Laws. The second suggestion called for the creation of an advisory board made up of judges, psychiatrists, and criminal experts to be called into consultation by the presiding judge. Other opinions expressed before the Commission called Governor Smith's proposal "very technical and legal" and held that the sentencing board "would be a most pronounced step to be taken at the present time, since it would mean the abrogation of the power of a judge to sentence a prisoner." The release of entirely unfavorable comment indicated that the Crime Commission itself had no sympathy for the suggestion.

TRUANCY AND CRIME. The Crime Commission of New York State, in a report on an investigation of 251 juvenile delinquents made public late in November, showed that truancy was the first step in the launching of a crime career. These 251 cases made up 679 arraignments divided into the following: 377 truancy charges, 130 juvenile delinquency charges, 177 misdemeanors, and 55 felonies. Fifty-one per cent of the children had court records subsequent to truancy. The report of the Crime Commission revealed some interesting statistics. Fifteen per cent of the group studied were of native parentage. The more serious crimes, i.e., burglary, grand larceny, and robbery, were committed more frequently, in proportion to their numbers, by the children of native-born parents and remote immigrants than was the case of the children of recently arrived immigrants. Almost the entire group surveyed lived under conditions of extreme

poverty. Family conditions, too, were unfavorable, in that homes had been broken up by death or desertion. The report pointed out the extraordinary wastefulness of the legal method of handling problems such as these in the following: "The individual method is probably less expensive than the method of legal procedure. In the 251 cases studied no fewer than 679 arraignments before educational and judicial authorities took place and 460 commitments were made to various reformatories and penal institutions. The process of arraigning and maintaining these boys must have cost incalculable thousands. The community has been reimbursed through fines to the extent of \$368. Surely New York City, with its willingness to tear down old structures to make place for new must concede the like importance of tearing down old methods when they stand in the way of progress. . . . There is no doubt that the time to institute modern methods of child guidance is during childhood. There is no doubt that the school system is the place to begin the method. A decent consideration for our wayward children, if not for our own security and peace of mind, requires that we inaugurate such methods without further delay." The report carried the following recommendations: The establishment in schools of clinics for the medical, psychological, and psychiatric study of behavior-problem children. A revision of the school curriculum to meet the needs of that large group of children who have not the capacity for the regular academic curriculum because of mental defectiveness or emotional instability. The Bureau of Attendance of the Board of Education should be furnished trained case-workers for the supervision of children who are chronic truants.

CHICAGO. The newspapers continued to be filled with vivid accounts of the uncertainties of life in America's second largest city. There were tales of bombings of the homes of gangsters as well as of innocent citizens; of elaborate funerals for slain gangsters; of jurors intimidated, a corrupt police force, and politics, being the handmaiden of crime. One alarmed newspaper man put the estimated number of violent deaths in the city for one year at "between 600 and 1000 persons and the number of felonies committed at thousands." Naturally, these tales gave prominence to different views publicly expressed by various individuals. For example, Judge Marcus Kavanaugh of the Cook County criminal bench was given earnest attention when he said that there were two things wrong with American criminal theory: first, that this country stood alone in allowing the accused to be considered innocent until proved guilty beyond a reasonable doubt; and second, that we were all wrong in imprisoning men to reform them. We should imprison men to punish them, refuse bail to all indicted persons formerly convicted of a felony, limit paroles, pardons, and probation to first offenders only, make a five-sixths verdict of the jury sufficient except in death penalty cases, and kill all murderers. In short, there is everything here but sterilization.

It was reported that the Chicago Bar Association indorsed most of the judge's recommendations. Other zealous persons found that the existence of foreign-language groups were responsible for the "crime wave" and that therefore what was needed was a law compelling these

people to abandon their foreign-language newspapers and read and write the English language. Also, martial law would help. Also, being ferocious would help. There is cited, in approval of this matter, the action of the Chicago Crime Commission which "bears down hard on criminals by endeavoring to see that their punishment is severe and inevitable. It fights continuances and delays." The work of this crime commission was called the only bright spot in the city and it was credited with the decrease in burglaries and robberies. "However, the number of murders shows an increase from 330 in 1919 to 399 in 1927. As the first half of the current year carries a total of 186, it appears that 1928 will reveal an encouraging decrease." In short, crime was decreasing, crime was not decreasing; the crime commission has been responsible for the lowering of the number of felonies, it has not lowered the number of murders. The crime situation in Chicago appeared to be very confusing.

BIBLIOGRAPHY. The above views of Judge Marcus Kavanaugh are to be found in his *The Criminal and His Allies* where the keynote sounded is that the unfailing panacea for criminality is summary justice and severe punishment. Boris Brasol's *The Elements of Crime* is of another order. He analyzes the social and bio-psycho factors in crime, though he insists upon discounting unduly the force of economic conditions. Mr. Brasol recognizes the important rôle of psychiatry, but does not give the subject adequate treatment. *The New Criminology*, by Max Schlapp and Edward H. Smith, is frankly revolutionary. Dr. Schlapp believes that crime is a socio-medical problem in which lawyers and judges have no important rôles. He regards crime as an aspect of human behavior and points out that only in the study of behavior shall we get at anything vital. See ILLINOIS; INDIANA.

CRITCHETT, R. D. See CARTON, RICHARD CLAUDE.

CRITICISM. See LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE; ITALIAN LITERATURE; SCANDINAVIAN LITERATURE; SPANISH LITERATURE; ETC.

CROATIA (krô-â'shî-â) **AND SLAVONIA.** Since 1928 a province of the new State of Jugoslavia, formerly a crownland of the Austro-Hungarian Empire, extending from the Adriatic Sea to the Danube River. Area, Jan. 31, 1921, 16,920 square miles; population at the same date, 2,739,593. Capital, Zagreb or Agram, with a population in 1921 of 108,338 (estimated in 1927, 130,000). See JUGO-SLAVIA.

CROPS. See AGRICULTURE and articles on various crops such as CORN, OATS, TOBACCO, WHEAT, ETC.

CROSS-COUNTRY RUNNING. The United States national cross-country championship in 1928 passed from Willie Ritola, who had held it for three years, to Gus Moore of the Brooklyn Harriers Association. Moore covered the six-mile course at Van Cortlandt Park, New York City, in 31 minutes, 18 seconds. Ritola did not compete. Moore also captured the Metropolitan senior title over the same course, Ritola passing up a defense of this title, too.

Pennsylvania State College for the third year in succession won the championship of the Intercollegiate Association of Amateur Athletes of America. The individual honors went to James L. Reid of Harvard who won by 12 yards from

Francis Lindsay of the University of Maine. William Cox, who had won this title two years in succession, finished in third place.

Frank Titterton of the Millrose A.A. captured the national ten-mile championship and Clarence De Mar of Melrose, Mass., won the annual Marathon contest. See OLYMPIC GAMES.

CRUISER. See NAVAL PROGRESS.

CRUSTACEA. See ZOÖLOGY.

CUBA. A republic of the West Indies consisting of the large island of the same name, the Isle of Pines, and small adjacent islands. Capital, Havana.

AREA AND POPULATION. The area is 44,164 square miles of which 41,634 are for the island of Cuba, 1180 for the Isle of Pines, and 2350 for the other islands. According to figures furnished by the Director of the Census Bureau the population of Cuba on Apr. 30, 1926, was 3,350,026 inhabitants, distributed as follows:

	<i>Inhabitants</i>
Pinar del Ría	280,831
Habana	922,433
Matanzas	335,080
Santa Clara	719,263
Camagüey	245,042
Oriente	847,377

According to the same source the population at the beginning of 1928 was 3,573,850. In 1928 there were 17,469 marriages, 58,387 births, 6008 still-births, and 41,751 deaths.

The City of Havana had 580,946 inhabitants in 1928, being the only city in the Republic whose population was over 100,000. Other important cities are Cienfuegos, 72,919; Camagüey, 92,073; Manzanillo, 60,544; Santiago de Cuba, 73,800; Guantánamo, 52,598; Santa Clara, 69,200; and Sancti Spiritus, 86,418. There is a large transitory immigration yearly consisting largely of Spanish laborers who return to Spain after the harvest season. The number of immigrants in the year ending June 30, 1927, was 37,186 representing many nationalities. The largest number, 19,193, were Haitians, followed by 9555 Spaniards and 2312 Jamaicans.

EDUCATION. Primary instruction is free and compulsory between the ages of 6 and 18. The public system was developed under American supervision after the passage of the Education Act of 1899. According to statistics compiled by the Division of Statistics, there were, in the year ending June 30, 1927, 321,821 children enrolled in the 3702 elementary schools, which had 7110 teachers. There were also 70 traveling teachers who taught 3435 pupils; 82 night schools for working people with 3679 pupils. There were also 467 private schools with 1545 teachers and 30,293 pupils. There is a special institute for advanced instruction in each province, and annexed to each is a normal school for the training of teachers. University instruction is provided by the University of Havana, which was founded in 1721 and had 5473 students in 1926-27.

PRODUCTION. Cuba is essentially an agricultural country, sugar and tobacco being the staple commodities. Other products are cacao, cereals, coffee, potatoes, and fruits. The island is the largest producer of sugar in the world. (See SUGAR). Despite the plan of governmental control (see two preceding YEAR BOOKS) of the sugar industry, with a view to reducing the oversupply in world markets, the price of 1927

responded only partially. However, restriction was to be continued in 1928, and the crop limited to 4,000,000 tons as compared with 4,508,000 tons actually produced in 1927. The trouble with

United Kingdom increased by 43.8 per cent, the actual gain being \$9,636,854. Germany and Spain also purchased slightly more in 1927 than in the previous year.

CUBAN EXPORTS BY COUNTRIES OF DESTINATION

Country	1926	1927	Increase or decrease	Per cent of gain or loss
United States	\$242,881,819	\$254,195,052	+\$11,313,233	+4.6
Other American countries	10,696,130	10,020,398	-675,732	-6.3
United Kingdom	21,981,160	31,618,014	+9,636,854	+43.8
France	5,975,303	4,284,336	-1,690,967	-28.3
Germany	1,676,136	2,249,685	+573,549	+34.2
Spain	1,325,242	1,505,275	+180,033	+13.6
Other European countries	5,455,681	9,739,537	+4,283,906	+78.5
All other countries	11,717,310	7,532,358	-4,184,952	-35.7
Total	\$301,708,731	\$321,144,655	+\$19,435,924	+6.4

the economic structure of Cuba is the fact that it depends almost entirely on the price of sugar. With the dislocation of the European beet-sugar industry during the War and the resultant heavy demand for sugar, Cuba, with its many advantages, rapidly increased its output. The heavy investments in sugar production, embracing investments in railways and other facilities incident to this expansion, caused a corresponding growth of commerce and industry. This culminated in the boom of 1920, when sugar prices went to abnormally high levels, and the

Imports into Cuba recorded a further loss of 1.4 per cent in 1927, dropping from \$260,826,438 to \$257,088,036 as a result of the continued depression of business which existed throughout the year. Imports from the United States were approximately the same as in 1926, but the percentage of the total increased slightly from 61.4 in 1926 to 62.1 in 1927. France, which was the only major country to which Cuba exported less in 1927 than in 1926, was, on the other hand, the only major country to show a gain in imports in 1927.

CUBAN IMPORTS BY COUNTRIES OF ORIGIN

Country	1926	1927	Increase or decrease	Per cent of gain or loss
United States	\$160,051,621	\$159,681,523	-\$370,098	-.2
Other American countries	24,592,835	23,037,534	-1,555,301	-6.3
France	11,873,427	12,415,512	+542,085	+4.5
United Kingdom	12,473,886	11,503,783	-970,103	-7.8
Spain	11,515,931	10,450,061	-1,065,870	-9.2
Germany	7,742,852	7,649,660	-93,192	-1.2
Other European countries	13,470,195	14,343,835	+873,640	+6.5
All other countries	19,105,691	18,006,128	-1,099,563	-5.8
Total	\$260,826,438	\$257,088,036	-\$3,738,402	-1.4

severe depression of 1921 followed. The check to the sugar industry was only temporary and in 1925 and 1926 exports of sugar were greater in quantity than in 1920. With the progressive restoration of the beet industry in Europe and the continued growth of production in Cuba and in other countries, the industry has been faced with surplus supplies which account for the low prices of recent years. When the price of sugar is low it naturally follows that Cuba's buying power is seriously restricted.

COMMERCE. The foreign commerce of Cuba in 1927 amounted to \$578,232,691, an increase of \$15,697,522 over that of 1926, according to figures issued by the statistical section of the Cuban Treasury Department. The improvement in 1927 was a result of the enhanced value of exports, as imports recorded a further recession, which increased the favorable balance of trade from \$40,882,293 to \$64,056,619.

Exports were valued at \$321,144,655 in 1927, an increase of 6.4 per cent as compared with the total of \$301,708,731 in 1926. The improvement in the export trade was primarily the result of greater returns from the sugar crop, which, despite the smaller quantity exported in 1927, brought a higher return. Exports to the United States increased \$11,313,233 and were 79.1 per cent of the total as compared with 80.4 per cent in 1926. Shipments to the

FINANCE. The unfavorable economic conditions prevailing throughout Cuba in 1926, 1927, 1928 have made the task of balancing the budget difficult. Early in 1927 it was resolved to cut down the 1926-27 budgetary expenditures from about \$87,000,000, as voted in 1925 by Congress, to about \$81,000,000. This was done by reducing the budgetary item of \$5,000,000 to be paid into the public works fund to \$500,000, and by passing the payment of \$2,650,000 to be made by law to holders of "floating debt certificates." The budget of 1927-28 was similarly reduced to \$80,940,802. An arrangement was made for an advance by New York bankers of \$9,000,000 to pay off the floating debt certificates.

The budget for 1928-29 provided revenues of 84,400,000 pesos and expenditures of 84,387,210 pesos, leaving a surplus of 12,790 pesos.

The total debt of Cuba on Feb. 29, 1928, was \$93,443,500, of which \$83,379,300 represented foreign debt and \$10,064,200 internal debt. Between Sept. 30, 1927 and Feb. 29, 1928, \$2,475,200 had been paid off on the combined debt.

COMMUNICATIONS. In 1926, 7408 vessels of 24,421,972 tons net entered and 7244 vessels of 23,893,754 tons net cleared the ports of the Republic in the foreign trade. In the coastwise trade 11,094 vessels of 2,062,664 tons net entered and 11,035 vessels of 2,062,646 tons net cleared. The total length of railways in Cuba in

the spring of 1928 was 4871 kilometers. In reporting on the Cuban railways in 1927, it was stated that the economic depression which prevailed throughout the country during 1927 naturally reacted adversely on the railroads of the Havana consular district. Both freight and passenger traffic suffered from this depression. The after-effects of the cyclone of 1926 were especially noticeable, as the damage to the sugar cane resulted in a lowering of the sugar content and a consequent operating loss to the mills of the Provinces of Havana and Pinar del Rio. Another reason for the decrease in revenues was the increase in competition offered by the omnibuses, which had not only established many lines in the City of Havana and its suburbs, but had extended their services to reach many small outlying towns.

The principal new construction enterprise initiated by the railroads in 1927 was the completion by the Consolidated Railways of Cuba of a standard-gauge line connecting Moron with Santa Clara, a distance of 152 kilometers. The United Railways extended their service of gas cars. Nine were in operation and orders were placed for eight more. When these new ones arrive it was expected that 559 kilometers of railroad would be devoted to the gas car service, supplanting the more expensive steam locomotive service. This company also during 1927 renewed 25 kilometers of track with 80-pound rails and 19.7 kilometers with 62-pound rails. The Central Providencia constructed a new branch covering two kilometers of wide-gauge track. The Hershey Cuban Railway Co. constructed 12 kilometers of track for private cane-car service. The length of the United Railways of Havana at the close of 1927 totaled 1301 miles, as compared with 1250 in 1926. Operating revenue during the fiscal year ended June 30, 1927, amounted to \$17,658,825 (\$19,197,517 in 1925-26), and operating expenses were \$13,271,541 (\$14,489,335 in 1925-26). While receipts for the year showed a large decrease, it was not nearly as much as the decrease of \$4,954,823 in the previous year as compared with the fiscal year 1924-25. The new railway tariffs established by the Railroad Commission, which were put into effect on Apr. 26, 1927, had very little effect on the operating results of the railway, since they were actually in effect only about two months before the close of the fiscal year.

In 1927 there were 1030 miles of highway; in 1925, 10,939 miles of telegraph wire; in 1926 63,834 telephone instruments in use; and in 1927, 38,038 motor vehicles were registered.

GOVERNMENT. Executive power is vested in a president and cabinet; and legislative power in a congress of two houses, viz., a senate with 24 members and a house of representatives with 118 members. President in 1928, Gen. Gerardo Machado, inaugurated May 20, 1925; term expires May 20, 1929; Vice President, Carlos de la Rosa. See **MILITARY PROGRESS.**

HISTORY. The amendments to the Cuban constitution approved by Congress were submitted to the Constitutional Convention in accordance with the provision of Article 115 of the constitution. On May 9, 1928, the Constitutional Convention approved these amendments and transitory provisions, which were then published by order of the President, becoming a part of the constitution on May 11. Among the most important changes effected were: Article 38, which for-

merly granted suffrage only to male Cubans over the age of 21, with certain exceptions, now grants suffrage to all Cubans over 21, the laws governing woman suffrage to be passed by a two-thirds vote of the total number of the members of the Chamber of Representatives and the Senate: The Isle of Pines is now incorporated in the territory of the Republic: The Municipality of Havana was suppressed and the Central District created in its place: The number of Senators from each province was increased from four to six: The term of a representative was increased from four to six years, and the chamber is to be renewed by half its members every three years instead of every two: The presidential term is extended from four to six years, the right to reelection being eliminated.

As a result of a general election for president held on November 2, General Gerardo Machado, the choice of the three main political parties in Cuba, was elected to succeed himself. He was elected for six years in accordance with the constitutional amendment mentioned above. During October a meeting of the United Spanish War Veterans was held in Havana. In addressing this body, President Machado urged the repeal of the Platt Amendment to the Cuban Constitution on the grounds that it was no longer necessary since Cuba had achieved a stable government and was a sovereign power in every way.

CULTURE. See **ANTHROPOLOGY.**

CUMBERLAND PRESBYTERIAN CHURCH. A branch of the Presbyterian Church, originally the Cumberland Presbytery of Kentucky. It was formed in 1810, when the so-called anti-revival party of the church objected to the admission into the ministry of men who were not up to the usual literary and theological standards and to the doctrine of fatality as taught in the third and tenth chapters of the Westminster Confession of Faith. Its chief strength was in the Southern States, in consequence of which it was barely saved from disunion during the slavery dispute at the time of the Civil War. This situation led to the establishment of the Colored Cumberland Presbyterian Church (see below). A general assembly which meets annually is the supreme judiciary. In 1928 the denomination comprised 11 synods and 62 presbyteries, and there were 1215 churches, reporting 753 ministers, and a church membership of 57,695. The Sunday-school enrollment was approximately 50,000. The property of the church was valued at \$3,480,621, not including \$500,000 endowment for education. Missionary work was carried on among the Indians in the United States, and churches were maintained in China, where there was an organized presbytery at Canton with eight churches in South China. During the year mission work was opened up in South America. The denomination carried on educational work under the direction of the Board of Education and maintained Bethel College and the Cumberland Presbyterian Theological Seminary, both at McKenzie, Tenn. *The Cumberland Presbyterian*, published at Nashville, Tenn., is the official organ of the Church. The 1928 national meeting was held at Jackson, Tenn., and the 1929 meeting was announced for May 10-22, at Princeton, Ky. The Rev. J. L. Hudgins, Nashville, Tenn., was moderator of the general assembly, and the Rev. D. W. Fooks, Paducah, Ky., was stated clerk and treasurer.

CUMBERLAND PRESBYTERIAN CHURCH, COLORED. A branch of the Cumberland Presbyterian Church which was legally set apart as a separate unit in 1869. The membership of 178 churches of the denomination for which figures were given in the United States census of religious bodies of 1926 was 10,868, as compared with 136 churches and 13,077 members in 1916. In 152 churches reporting Sunday schools, there were over 5000 pupils and 840 officers and teachers, as against 7471 pupils and 928 teachers and officers in 1916. The total expenditures of 167 churches in 1926 amounted to \$80,304, of which \$70,437 was for current expenses and improvements and \$9867 for benevolences, missions, etc.; while 127 churches reported total expenditures of \$39,497. The value of church edifices, including furniture and equipment, as reported by 162 churches, was \$353,825 in 1926, as compared with \$230,426 reported by 130 churches in 1916. Of the 178 churches reporting in 1926, 60 were in urban communities and 118 in rural districts.

CURACAO, koo'ra-sā'ō. A Dutch colony in the West Indies consisting of two groups of islands about 500 miles apart, one of them comprising the islands of Curaçao, Bonaire, and Aruba, and the other consisting of the southern part of St. Martin (the northern part belongs to France), St. Eustache, and Saba. Area, 403 square miles; population, Dec. 31, 1926, 58,162, of whom 38,781 were on the Island of Curaçao. The capital is Willemstad, on the Island of Curaçao, with a population of 17,889. In 1926 there were 51,520 Roman Catholics, 5978 Protestants, and 549 Jews. The movement of population in 1926 was: Births, 1746; deaths, 1539; marriages, 455. In the same year there were 43 schools with 8813 pupils. The chief products of the colony are maize, beans, pulse, cattle, salt, and phosphate of lime. The chief industry is oil-refining. The crude oil is imported from Venezuela and Mexico. In 1926 the imports were valued at 107,178,462 guilders and the exports, 95,487,238 guilders; 6817 vessels of 17,895,686 tons entered the ports of the colony in 1926. In 1928 the budget revenue was estimated at 3,597,600 guilders and the expenditure at 3,535,824 guilders. The colony is administered by a governor aided by a council and a colonial council, the members of both being nominated by the sovereign. Governor in 1928, Dr. N. J. L. Brantjes.

CUREL, VISCOUNT FRANÇOIS DE. French novelist and playwright and member of the French Academy, died at Paris, April 26. Born at Metz, June 10, 1854, he was educated at the College of St. Clément, Metz, and studied engineering at the Central School of Arts and Manufactures, in preparation for assumption of control of his family's extensive metallurgical business, but he gave up commercial affairs for the writing of novels and plays. He was especially successful as a dramatist, and his work was recognized in 1918 by his election to the French Academy and by his appointment as an officer of the Legion of Honor. He was been called by critics one of the most powerful and original French dramatists of modern times, and has been compared with Corneille and Ibsen. Many of his plays treat of labor and capital, the genesis of religion, and the modern idolatry of science, and show the influence of Ibsen. His plays include: *A False Saint*, *The Possils*, *The*

Lion's Feast, *The New Idol*, *The Girl Savage*, *The Dance Before the Mirror*, *No Man's Land*, *The Comedy of Genius*, *She Who Brought Life*, *He Who Was Dying*, and *The Mystical Storm*. He wrote also two novels, *The Summer of the Dry Fruits* and *The Rescue of the Grand Duke*.

CURLING. The United States regained possession of the Gordon International Medal in 1928. The thirty-fourth annual competition for this trophy was held at Utica, N. Y., in March when the United States team defeated Canada by a score of 278 to 254. The trophy had been in possession of the Canadians for three years.

CURRENCY. See COINS, VALUE OF FOREIGN; FINANCIAL REVIEW; MONEY; UNITED STATES.

CURTIS INSTITUTE OF MUSIC. See MUSIC.

CYCLING. Cecil Walker of Australia for the fifth consecutive year captured the all-around bicycling championship of the United States. Lucien Michard of France retained his world professional crown and Franco Georgetti successfully defended his motor-paced championship. Georgetti also was the outstanding six-day rider of 1928, he and his partners winning both of the competitions held at New York City and finishing third in the only Chicago six-day race in which he competed. Walter Sawall of Germany won the world professional motor-paced championship, the amateur honors going to Willy Falck Hanson of Denmark. Freddie Spencer captured the American professional sprint title, and Charley Ritter of Newark won the all-around American amateur championship.

CYPRUS. A British island, situated 40 miles from the coast of Asia Minor and 60 from the coast of Syria; the third largest island in the Mediterranean Sea. Area, 3584 square miles; population, according to the census of 1921, 310,709, of whom 61,422 were Mohammedans. Capital, Nicosia, with a population of 18,461. In 1926 there were 889 elementary schools with 1270 teachers and an enrollment of 48,501, of whom 38,477 were Greek Christians. With about one-third of the arable land under cultivation, agriculture forms the chief occupation of the people of the island. Forestry and the cultivation of the vine are rapidly taking an important place in the production of wealth on the island. Among the principal agricultural products are wheat, barley, oats, potatoes, linseed, cotton, animal products, and fruit. Asbestos and copper are mined and exported in considerable quantities.

The merchandise imported in 1927, was valued at £1,585,939; exported, £1,542,870. The revenue for the same year was £629,266 and the expenditure, £655,227. The total shipping which entered and cleared amounted to 1,584,685 tons in 1926. The island was administered under a convention with Turkey by Great Britain after June 4, 1878, and was annexed by Great Britain at the outbreak of the war with Turkey on Nov. 5, 1914. It is under a high commissioner having the usual powers of a colonial governor, aided by an executive council and a legislative council of 24 members of whom 9 are office-holders and the remainder elected for five years, 12 of them by non-Mohammedan voters and 3 by Mohammedan voters. On May 1, 1925, the island was given the status of a colony. Governor during 1928, Sir Ronald Storrs.

CYRENAICA. A colony belonging to Italy on the north coast of Africa; until 1919 it

formed a part of Libya; in that year for administrative and military purposes, Libya was divided into Cyrenaica and Tripolitania. (See TRIPOLITANIA.) The area is estimated at about 285,640 square miles; population, according to the census of 1926, about 185,000 natives, and 10,000 Europeans. Benghazi is the principal town with a population of 30,056 in 1927. The chief occupation of the people is agriculture, although there are vast possibilities for cattle raising. Barley and wheat are the chief products. The former is the chief food of the people. In 1926 the imports were 171,733,100 lire and the exports 25,930,800 lire. The principal imports are cotton goods and sugar and the principal exports, sponges and barley. The internal commerce consists mainly of caravan trade between Benghazi and Wadi. For 1927-28 the revenue and expenditure were estimated at: Colonial revenue, 207,170,250 lire; civil expenditure, 60,124,000 lire; military expenditure, 147,046,250 lire; estimated revenue and expenditure for 1928-29, 209,206,250 lire. Governor during 1928, S. E. Attilio Teruzzi (appointed Dec. 2, 1926).

CZECHOSLOVAKIA, *chěko-slovákia*. An eastern European republic, formed Oct. 28, 1918, out of the Slav regions of the old Austro-Hungarian Empire; formally dedicated a republic, Nov. 14, 1918; comprising the former Austro-Hungarian provinces of Bohemia, Moravia, Silesia, Slovakia, and Ruthenia, together with the portion of the Teschen district assigned to Czechoslovakia at the Ambassadors' Conference July 28, 1920. Capital, Prague.

AREA AND POPULATION. The total area of Czechoslovakia is 54,207 square miles. The population at the census of Feb. 15, 1921, was 13,613,172. By race it was distributed as follows: Czechoslovaks, 8,760,937 (65.5 per cent); Germans, 3,123,568 (23.3 per cent); Magyars, 745,431 (5.5 per cent); Ruthenians, 461,849 (3.4 per cent); Jews, 180,855 (1.3 per cent); Poles, 75,853 (0.5 per cent); others, 25,871 (0.2 per cent). There were also 238,808 aliens. The Czechoslovaks and Germans made up almost exclusively the population of Bohemia and Moravia, and the Czechoslovaks about half of Silesia and more than two-thirds of Slovakia. The largest cities, with their populations in 1921, are: Prague, 676,657; Brno, 221,758; Ostrava, 113,709; and Bratislava, 93,189. The majority of the people are Roman Catholics, who numbered 10,383,833 in 1921. An official estimate of the population on Dec. 31, 1926, placed it at 14,356,600.

EDUCATION. Primary education is compulsory between the ages of 6 and 14. In 1926 there were 14,158 public and private elementary schools, with 694,282 boys and 709,541 girls and 1736 public and private higher grade schools with 165,601 boys and 144,409 girls. There were also 354 secondary Latin and technical schools with 108,760 students. There are four universities as follows: Prague (Czech) with 8176 students; Prague (German), 3447; Brno (Czech), 1878; Bratislava (Slovak), 1309.

PRODUCTION. Czechoslovakia is one of the richest of all European countries in natural resources, and it finds itself in the enviable position of being almost self-supporting so far as food is concerned. Within the present borders of Czechoslovakia are to be found practically all of the former Austro-Hungarian Empire's sugar-producing area, 60 per cent of the breweries, 50 per

cent of the alcohol distilleries, nearly two-thirds of the iron production, and four-fifths of the textile industry. Other industries were included in like proportion in the new country, some even to the extent of 100 per cent, such as the famous Bohemian glass industry and the china industry.

The soil of Czechoslovakia is naturally fertile, especially in the lower part of the country, where the cultivation of beets, wheat, barley, rye, and oats is carried on quite extensively. The area under the principal crops and their yield in metric tons during 1926 were as follows: Wheat, 1,551,750 acres, 928,889 tons; rye, 2,068,563 acres, 1,166,138 tons; barley, 1,763,834 acres, 1,143,061 tons; oats, 2,093,136 acres, 1,379,886 tons; potatoes, 1,604,903 acres, 5,046,685 tons; sugar-beet, 686,464 acres, 6,599,051 tons; maize, 391,793 acres, 265,502 tons. In 1925-26 there were 166 sugar factories in the country, which produced 1,507,344 metric tons of sugar. The 525 breweries produced 9,712,625 hectolitres of beer and 892 distilleries produced 580,010 hectolitres of spirits. The livestock on Jan. 1, 1927, included: Cattle, 4,691,320; horses, 740,202; pigs, 2,539,201; sheep, 861,128; and goats, 1,244,701.

The mineral production comprises both soft and hard coal, iron, graphite, garnets, gold, silver, copper, and lead. The 332 coal mines, which employed 118,288 persons, produced in 1926, 18,789,098 tons of lignite and 14,507,596 tons of hard coal.

The manufacture of glass is one of the oldest industries in the country. It has been estimated that the factories have an annual manufacturing capacity of 415,000 tons of hollow glass, 132,000 tons of plate and window glass, and 187,000 tons of special glass. Other important and active industries of the country are the manufacture of china and textiles, leather working, and brewing.

COMMERCE. The following table from *The Statesman's Year Book* for 1928 gives the principal articles of import and export in 1926 and 1927:

Imports	1926	1927
	1,000 Crown	1,000 Crown
Cereals	1,870,175	2,172,000
Cottons	2,123,750	2,659,000
Woollen Goods	1,573,359	2,040,000
Fats and Oils	669,082	626,000
Iron Goods	422,204	519,000
Machinery	461,599	473,000
Exports		
Woollen Goods	1,610,730	2,085,000
Cottons	2,484,486	3,071,000
Wood, coal, peat	1,751,776	2,032,000
Glass	1,168,994	1,144,000
Sugar	2,247,162	1,525,000
Iron and iron goods ..	1,253,939	1,619,000
Cereals, milled products	781,436	1,000,000

FINANCE. No later figures for finance were available than those for 1927 when the ordinary and extraordinary revenues totaled 9,723,914,000 crowns and the ordinary and extraordinary expenditures totaled 9,703,505,000 crowns. The national debt, according to that budget, was placed at 34,945,000,000 crowns.

COMMUNICATIONS. There are 8522 miles of railway line in the Republic, of which 6849 are owned by the State and the remaining 1592 miles privately owned, 12 miles owned by foreign states, and 69 miles owned by foreign railways.

Revenues equivalent to approximately \$126,029,400, an increase of about \$8,211,700 over 1926 receipts, were reported by the Czechoslovakian railways for 1927. As compared with the preceding year, passenger traffic decreased about 3 per cent while during the same period the carloadings of freight traffic increased by 539,612 cars to 1927 total of 6,127,814. Of this total, 5,435,482 cars were destined to stations within Czechoslovakia while the remaining 692,332 were forwarded to other countries.

GOVERNMENT. According to the constitution adopted by the National Assembly, Feb. 29, 1920, executive power is vested in a president, elected for seven years by the two chambers in joint session, who appoints and recalls his ministers; and legislative power in a senate of 150 members elected for eight years and a chamber of deputies elected for six years, the former elected by all citizens over 26 years of age and the latter by all citizens over 21 years of age. The principle of proportional representation is applied. President in 1928, Thomas G. Masaryk (elected May 28, 1920; reelected May 27, 1927). The Czechoslovak Government, appointed on Oct. 12, 1926, consists of the following ministers: Prime Minister, Antonín Švehla; Foreign Affairs, Dr. Eduard Beneš; Finance, Dr. Karel Engliš; Interior, J. Cerný; Commerce, F. Peroutka; Public Works, Dr. Franz Spina; Railways, Josef Najman; Social Welfare, Jan Šrámek; Justice, Dr. Roberts Mayr-Harting; Agriculture, Dr. Otakar Srdínko; Education, Dr. Milan Hodža; National Defense, František Udržal; Posts and Telegraphs, Dr. F. Nosek; Health, Dean Tiso (January, 1927); Unification of Laws, M. Gazík.

HISTORY. Czechoslovakia passed through a very quiet and prosperous year. The voice of the minority parties was stilled by the continued coalition of the Czechs and Germans. During the summer a naturalization treaty was signed between Czechoslovakia and the United States, by the terms of which each country recognized the complete expatriation of subjects upon naturalization in the other country. See **ARCHAEOLOGY**.

DAESCHNER, NOSKY-GEORGES-HENRI-ÉMILE, French diplomat, died at Paris, December 13. Born Jan. 3, 1863; he studied law, and, although admitted to the bar, entered the diplomatic service, being appointed attaché to the political division of the Foreign Office in 1887. He was made attaché to the Embassy at London in 1898, having his rank raised from second- to first-class secretary two years later. M. Daeschner served from 1905 until 1906 as chief in Théophile Delcassé's cabinet. On leaving the administration, he became secretary to the Embassy at Madrid, and in 1908 received a similar post at London. Appointed Minister Plenipotentiary, he was assigned to Lisbon in 1913, and to Bucharest in 1920. While directing the administrative bureau of the ministry of foreign affairs, he was chosen to succeed Jules Jusserand as Ambassador to the United States, in January, 1925. In spite of his popularity he was recalled in 1926, and on returning to France was appointed Ambassador to Turkey. M. DAESCHNER retired in April, 1928, and was awarded the Grand Cross of the Legion of Honor.

DAHOMÉY, dà-hô'mí. A French colony on the west coast of Africa between Togoland on the west, the British possessions of Lagos and Nigeria on the east, and the French military territories on the north. It is a subdivision of

the colony of French West Africa (see **FRENCH WEST AFRICA**). The colony has only about 70 miles of coast, but opens out northwards into a wide hinterland. Area, 42,460 square miles; population, according to the census of 1925, 970,609, of whom 900 were Europeans. The chief centre of trade and the seat of the Government is Porto Novo with a population of about 20,000. The population is of pure negro blood, and belongs to the Ewe family. They are very industrious and engage mainly in agriculture. In the coastal region they raise potatoes, corn, manioc, and yams. In the central provinces, cotton culture has been introduced. The forests contain oil palms of commercial importance. The chief exports are palm oil and palm kernels. Imports in 1926 amounted to 186,537,810 francs; exports, 181,704,213 francs. The local budget for 1926 was 19,102,000 francs.

DAIRYING. Conditions in the dairy industry were generally favorable during 1928. The production of dairy products in the United States was not sufficient to supply the increasing demand. Notwithstanding a small increased production, there was in 1928 an import balance equivalent to approximately a billion pounds of fluid milk. The total production of butter and evaporated milk showed a slight decrease, and dry milk, ice cream, and cheese production increased, the last approximately 14 per cent, according to the latest available estimates. The better organizations of dairymen and the coöperative marketing of dairy products, especially fluid milk, with special methods for handling the surpluses in the seasons of heavy production since the War and during the period of agricultural depression, placed dairymen in a relatively strong position as compared with many other agricultural enterprises. Plentiful feed with satisfactory prices for dairy products yielded fair returns to producers. There was a considerable shift in dairy-producing areas toward the South, due at least in part to the relatively high prices paid for market milk which is now being shipped considerable distances from sections which originally produced butter and cheese.

Prices for butter were well maintained throughout 1928, with the possible exception of the period in September and October when there was temporary evidence of some uncertainty. At nearly all times the differences between the New York and London markets were approximately 10 cents per pound, which, with the tariff of 12 cents, prevented appreciable imports.

During 1928, there were 4,659,288 pounds of butter imported as compared with 8,459,741 pounds in 1927. There is annually a considerable amount of cheese imported from the European countries, which, in 1928, amounted to 81,402,073 pounds. This was comparable to the cheese imports in 1927. Nearly all of the cheese imported is of special kinds on which a premium is placed for the imported product. Twenty-eight million pounds of the 1928 importation came from Italy and nearly 19,000,000 pounds from Switzerland.

The United States exported a very large amount of condensed, evaporated, and dried milk. The exportation in 1928 was heavier than in 1927, particularly for unsweetened evaporated milk, of which 76,788,833 pounds were exported in 1928 as compared with 68,047,141 pounds in 1927. The corresponding amounts of sweetened condensed milk exported in the respective years were 38,762,549 and 34,981,081 pounds. The large-

est amount of unsweetened evaporated milk going to any single country was nearly 27,000,000 pounds to the United Kingdom, but the Philippine Islands took nearly 16,000,000 pounds of evaporated milk and 8,000,000 pounds of sweetened condensed milk.

INTERNATIONAL CONDITIONS. Conditions were unusually favorable in practically all the important dairy-producing countries of the world. Fall production in Denmark was expected to exceed that of 1927. The three months' production, August to October, in 1928 slightly exceeded the production in the corresponding months of 1927. For the first two months of the season of production in New Zealand, estimates indicated an unusually heavy production of butter and cheese. The butter gradings exceeded those of the previous year by 13 per cent and the cheese gradings by 37 per cent. The conservative commercial estimate was a 10 per cent increase in the production of dairy products in New Zealand for the 1928-29 season. There was 60 per cent more butter received at the principal grading ports during August, September, and October of 1928, than in the corresponding period of 1927. The Netherlands continued to expand its production, as did Argentina. The butter imports of Germany and Great Britain, and the cheese imports of the latter country, showed considerable increase as compared with 1927. They were evidently profiting by the heavy production in the Southern Hemisphere, obtaining surpluses for future demand. Reports also indicated that dairying in Russia was rapidly recovering from the effects of the World War.

The limitation in the imports of dairy products as a result of the tariff of 12 cents per pound on butter and 37.5 per cent ad valorem on Swiss cheese no doubt had an important effect on the prices of dairy products in the United States. Otherwise, the heavy world production would have resulted in sufficient importation to lower prices considerably.

TRENDS IN RESEARCH. The increase in the consumption of dairy products resulted in part, at least, from the greater appreciation of the nutritive properties of these foods which has been experimentally demonstrated in investigations reported during the last few years. Because of their high nutritive value, considerable interest has arisen in the development of more varied ways of utilization and improvement of the quality and desirability of products already known. Striking examples of this may be drawn from the much increased consumption of chocolate milk, a product which a few years ago was practically unknown; and the much increased use of ice cream as a part of the standard diet. The use of other dairy products, particularly buttermilk and other types of fermented drinks, was also striking. The development of the chocolate-milk trade involved the matter of settling of the chocolate and producing an unattractive product when bottled for some time. The wheying off of buttermilk tends to detract from its stability. These problems were largely solved, the former by the use of improved chocolate preparations, and the latter by the addition of small amounts of gelatin.

Many of the State experiment stations and the United States Department of Agriculture conducted experiments on the effect of various ingredients and changes in the portions of the fat, milk solids-not-fat, and other ingredients in

the production of ice cream. A mix with an 8 to 10 per cent solids-not-fat content has generally been found to give the most desirable product from the standpoint of smoothness of texture and firmness of body. Mixes containing larger amounts of fat scored well in flavor, body, and texture, but the overrun was reduced. Ice cream with a low fat content deteriorated in quality during the storage period. The fat and serum solids content of the mixture have little effect upon the whipping quality. Homogenization and aging for 24 hours were generally found to improve the whipping quality of the mix and the smoothness in texture of the frozen product.

The destruction by pasteurization of bacteria causing fermentation in milk for cheese making and cream for butter making, with the subsequent inoculation of the desired types of organisms, generally give the best results, particularly from the standpoint of the flavor after storage. The use of the holder method of pasteurization in cheese making gave a better yield than the flash or flash-holder methods. The addition of a small amount of calcium chloride to the milk from which Cheddar cheese was made increased the yield and the amount of fat incorporated in the cheese. Less rennet was also required for the necessary coagulation.

In studies at the Illinois station of the cause of feathering of cream, it was found that heat precipitated calcium caseinate. Water containing calcium salts also caused a disturbance in the salt balance and resulted in feathering. Sodium citrate reduced it, while calcium chloride increased the precipitation upon the application of heat. Variations in the feathering of different samples were attributed to different stages in the lactation period, resulting from the fact that cows produced milk with a higher mineral content just after freshening and toward the end of the lactation period.

CHANGES IN PERSONNEL. The more important changes in personnel during the past year in the dairying field included the resignation of Prof. E. L. Anthony, head of the department of dairy husbandry at the West Virginia University and Experiment Station, to accept the appointment as head of the division of dairy husbandry at the Michigan Agricultural College, left vacant by the resignation of Prof. O. E. Reed, who became Chief of the Bureau of Dairying, of the U. S. Department of Agriculture. Prof. A. D. Pratt was appointed professor of dairy husbandry at the Connecticut Storrs Agricultural College. O. G. Schaefer, professor of dairy husbandry and dairy husbandman at the Minnesota University and Experiment Station, resigned to engage in commercial work, as did Prof. G. D. Turnbow, of the California University and Experiment Station.

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DALE, ALAN (ALFRED J. COHEN). American dramatic critic and playwright, died in England May 21. He was born at Birmingham, England, May 14, 1861, and was educated at King Edward's School, Birmingham, and Oxford University. He went to New York in 1887, and became dramatic critic of the *New York Evening World*, remaining with that newspaper until 1895, when he accepted a similar position with the *New York Journal*. From that time until his death he was a member of the Hearst newspaper organization, except for a brief period in 1914. In point of continuous service, Mr. Cohen, who wrote over the name "Alan Dale," was the oldest dramatic critic in New York City at the time of his death. Besides his criticisms, which were written in a characteristically bright and caustic style, he wrote books, plays, and magazine articles.

DALMATIA. A province of Jugo-Slavia; a crownland of Austria until the downfall of the Dual Monarchy in 1918. It extends from Bosnia and Herzegovina west to the Adriatic Sea. Area, 4916 square miles; population, according to the census of Jan. 31, 1921, 621,429. Capital, Zara, with a population in 1921, of 8060.

DALZIEL, LORD, FIRST BARON DALZIEL OF WOOLER (DAVIDSON DALZIEL). British capitalist, died at London April 18. He was born in October, 1854. He was at first a journalist, in San Francisco, New York, and London, and established the Dalziel News Agency in the last named city, taking over the old *Morning Standard* and also the *Evening Standard*. His newspaper ventures proving only moderately successful, he turned his attention to the field of railways, and gradually acquired control of the International Sleeping Car Company and the British Pullman Car Company. These ventures were crowned with success, and one of the latest moves of Lord Dalziel in the field of transportation was the merger of his sleeping car company with Thomas Cook & Sons. He was the first man to introduce taxicabs on the streets of London. He was a member of the House of Commons from 1910 to 1923. For his services in the World War he was created a baron in 1918, having been knighted in 1908, and in 1927 he was raised to the peerage. He was an officer of the French Legion of Honor and a commander of the Order of the Crown of Italy.

DAMS. While great dam constructions were under way in many sections of the world, perhaps the most important two items of the year were the lessons learned from the St. Francis Dam catastrophe in California and the discussion of the Boulder Dam Project. The former focused attention on dam construction and on the design of such works. The latter involved economic as well as engineering problems of the first magnitude.

Studies of the St. Francis Dam seemed clearly to indicate a foundation failure, although the chief engineer, who had had long experience in dam construction, stated he was unable to account for the failure, and the theory that it

was caused by landslides from the side walls of the Canyon was advanced. Briefly stated, this failure showed that no matter how highly developed the theory of design may be in the matter of form and thickness of the dam cross-section, the character of the foundation, its ability to carry the load of the structure and to remain water tight under high-water pressure, is one of the main factors governing the design. This problem, unfortunately, is largely a matter of judgment and cannot be solved by mathematical or similar analysis. Designers are tempted, or even in some cases forced, to take chances with risky foundations due to economic pressure and lack of funds. The decision rests largely on experience and opinion and these are human factors which cannot be ignored. It seemed probable that this great and unfortunate catastrophe would result in legislation leading to more complete control of such constructions. It at least showed the need for expert advice from competent engineers, assisted by such aid from geological studies and borings as are essential, and that the decision in great works should not be left to one man but should represent the consensus of opinion of several experienced and expert advisers.

The provisions of the Boulder Canyon Bill, as finally passed just at the close of the year, commits the Federal Government to an expenditure of \$165,000,000. It is estimated to require seven years for completion, and involves the construction of the highest dam ever attempted by man—550 feet.

GRAVITY DAMS—THE ST. FRANCIS DAM DISASTER. On the night of March 12-13, 1928, the ends, or wings, of this 205-foot high, arched, gravity type of concrete dam, gave way, bringing death to some 450 people in the valley below, sweeping away a power house, bursting an aqueduct, and doing millions of dollars' damage to roads, railroads, farms, etc. A central portion of the dam, about 100 feet long (the total length was 650 feet) remained standing but both wings were wrecked by the release of the 38,000 acre-feet of water held in the reservoir. The torrent, said to have been 100 feet deep, carried huge portions of the structure almost half a mile down the valley.

The dam was located in the San Francisquito Canyon about 1½ miles above Power House No. 2 of the Los Angeles Municipal Power Bureau and roughly 45 miles north of the city of Los Angeles. Completed early in 1926 and built to provide storage for the Los Angeles aqueduct water for use in years of deficient run-off, it was practically full at the time of failure. Although some seepage had occurred around the dam, an investigation the day before the disaster showed clear water with no indication of erosion.

In general the reports of the many committees which investigated the failure agree in stating that the dam was of ample cross-section and was built of good materials so that its failure in no way reflects on the safety of this type of structure when built on adequate foundations. On the other hand, a fault classed as dead and in which no movement took place at the time of failure, passes through the dam site and results in the adjoining rock masses being badly shattered. These rocks consist of a mica schist of very poor quality and a rock described as red conglomerate and supposed to

have been formed of gravel loosely cemented with gypsum. Both materials, particularly the latter, have been found to soften under water. It is difficult, therefore, to state positively that any type of dam would have been absolutely safe at this site and it is even more clear that it was not a suitable foundation material for the gravity type; a type which requires a solid bed-rock base due to the high and unequal pressure exerted by this particular form of dam on its foundation.

BOULDER CANYON DAM. After much discussion and difficulty, the so-called Boulder Dam Bill passed the Senate on December 14, the House on the 18th, and was signed by the President on the 21st.

The fundamental difficulties connected with this work had to do primarily with the respective interests in it of the seven States involved. Arizona, in particular, was convinced that California was attempting to grab the lion's share of the irrigation and power benefits involved and, although California had available a practically immediate market whereas Arizona was sparsely settled with only a small percentage of her territory privately owned, she naturally insisted on a share in the benefits. As finally passed, the bill authorized Arizona, California, and Nevada to enter into an agreement providing that the $7\frac{1}{2}$ million acre-feet to be apportioned annually to the lower basin of the Colorado River may be divided so that Arizona will receive 2,800,000 acre-feet for "exclusive beneficial consumption" (that is, diversion less return of water to the river) in perpetuity. Nevada was to have 300,000 and California's share was not to exceed 4,400,000 acres-feet. Arizona also receives exclusive use of the Gila River within its territories. California also has a one-half share of any surplus over the $7\frac{1}{2}$ million estimated annual flow at Boulder Canyon. No work may be begun within six months unless all States ratify the Colorado River compact, but after this time six States, which must include California, may suffice to ratify.

Another bone of contention was the matter of water power. It was argued that this project, involving as it does the use of the water for power, would necessitate the Government going into the water-power business. The bill provides that the Secretary of the Interior, at his discretion, "may enter into contracts of lease of any unit or units of any government-built [water-power] plant, with right to generate electrical energy or alternatively to enter into contracts of lease for the use of water for the generation of electrical energy."

The Secretary of the Treasury was authorized to advance to the Colorado River Fund amounts not to exceed \$165,000,000 of which \$25,000,000 is on the score of flood control. See under UNITED STATES, *Seventieth Congress, Second Session*.

The main features of the project are the dam, the power house, and the canal. The bill contains several conditions relating to these. Before the dam can be built or the power house begun, the offers for power must be large enough to repay the money to be spent by the Government (less the flood control item) with 4 per cent interest. The canal is to be built and paid for under the provisions of the Reclamation Law and, provided the Imperial and Coachella valleys, the principal areas interested, are

prepared to pay the entire cost, contract for the canal could then be let.

Earlier in December a report from a special board of engineers and geologists appointed under resolution of Congress, advised that dams 550 feet high to impound 28,000,000 acre-feet of water were feasible at both the Boulder and at the Black Canyon sites. The latter site was recommended, however, as had previously been done by the engineers of the Bureau of Reclamation. A more conservative design than that proposed was approved in that, while both bodies advised the gravity type, the special board recommended that the maximum stress be limited to 30 tons per square foot instead of 40. Tunnels are to be used to divert the flow of the river around the site during construction. Here again the special board considered the Board of Review plans for three tunnels 35 feet in diameter to carry 100,000 sec. feet inadequate and recommended doubling this capacity. A larger spillway for floods is also advised. The All-American Canal was found to be feasible although it was recommended that the relations as regards Mexican and American water rights in the river be settled by agreement before the project was put under construction. The proposed canal will run from a point on the Colorado at Laguna Dam, about 23 miles above the present Imperial Canal intake, to the Imperial Valley and will involve, in one portion of 10 miles, protection from blown sands. The estimates of the special report were based on a construction period of seven years.

SAN GABRIEL DAM. The Los Angeles County Flood-Control District called for bids in November for the construction of a high dam at the forks of the San Gabriel Canyon and work is expected to be under way at an early date. The project has as its object the relief of flood conditions and the plans have been held up for over three years pending arrangements for financing. The dam site is about 30 miles east of Los Angeles and the dam, a very high structure (425 feet above stream bed and about 500 feet above foundations) was to be of the gravity-arch type. A storage capacity of 240,000 acre-feet will be developed and almost 3,800,000 cu. yards of concrete will be required (about three times the quantity used in the much discussed Muscle Shoals Dam). Irrigation water being much in demand in the area below the dam, it was planned to serve for this use as well as for the primary purpose of flood relief. With this end in view the lower 157,000 acre-feet will be used for impounding water for irrigation, while the upper 83,000 will be held available at all times for flood relief through storage.

OWYHEE DAM. At a point known as the Hole in the Ground about 21 miles southwest of Nyssa on the Union Pacific Railroad, the United States Bureau of Reclamation was planning to build a remarkably high gravity-arch-type dam. A reservoir will thus be formed which will have a total capacity of 1,120,000 acre-feet and will form the principal storage for the Owyhee Reclamation Project embracing some 120,000 acres in eastern Oregon and western Idaho. Steep canyon walls permit a comparatively short dam, in the main portion about 300 to 500 feet with a top length of between 800 and 900 feet to be carried up to the remarkable height of 520 feet above the lowest concrete of the deep foundation cut-off on an average of 390 feet above the gen-

eral foundation level. Contraction joints will be placed at intervals of 50 feet in the length of the dam and inspection galleries will be provided in the body of the structure which will be 20 feet thick at the top and probably about 300 feet at the base. Following, as this work did, the St. Francis disaster, great attention was paid to investigations of the foundation and experts have agreed upon this point. Work was to be under way in 1929.

ARCH DAM INVESTIGATIONS. The growing use of the arch dam, a type which relies for its stability on its curved form and arch action rather than simply on its weight as in the gravity form, resulted in an appeal to the American engineering societies represented by Engineering Foundation for aid in the solution of the problem. Such dams are particularly economical, indeed only suitable, where very steep side walls, such as are found in the canyons of the western United States, form the required "abutments" for the arch. The stability of such a structure, depending on a complicated combination of arch, gravity, and cantilever actions, being difficult of analysis, a special "test dam," the Stevenson Creek Dam, was built for testing at various heights with various depths of water. See YEAR BOOKS for 1923, 1924, 1925, and 1926. Studies of a model by the methods developed by Professor Beggs of Princeton combined with the results of the Stevenson Dam tests indicate that a clearer conception of the manner in which such dams support their load is being secured. Hope was expressed that a rational method of design may be developed for these structures with a consequent increase in safety and at the same time a reduction in thickness and cost.

TOLTEC DAM, NEW MEXICO. An interesting example of the possibilities of winter concrete construction under adverse conditions was afforded by the construction of this small arch dam (500 feet long, 78 feet high above stream bed) in the Zion Mountains in New Mexico at an elevation of 8000 feet. By using water heated to 200° and a torch in the mixer, concrete was delivered to the forms at 85° through an open-air chute and was protected by tarpaulins and warmed by salamanders.

MAENTWROG DAM, WALES. This British arch dam is not of any unusual dimensions or construction, but is one of the first European examples of the use of this American type. It is part of an extension, or additional development, of the North Wales Power and Traction Company which was organized in 1904 to supply power to a limited area in North Wales and vicinity. The original plant was a small one operating, however, under the remarkable head of 1130 feet. The new, additional plant will supply water to turbines of 15,000 kw. capacity and the district served by the company has been extended to 4080 sq. miles. It is located in an area of very high rainfall, the Snowdon Range in Wales, where the annual precipitation runs as high as 125 inches.

The Maentwrog Dam, one of four such structures, is of the arch type about 350 feet long and 90 feet high above stream bed or 115 feet above foundations. The dam section is of concrete, with a vertical upstream face, a downstream slope of 1 in 2½, and a constant radius of 210 feet. After passing through a 10-foot tunnel 1960 feet long and a low-pressure riveted steel pipe 9½

feet in diameter, of ¾- to ½-inch thickness, about 1 mile long, there is another short tunnel to the main pressure line, 6 feet in diameter, and the power house, where a head of 650 feet is obtained.

SPECIAL DAMS—LAKE PLEASANT DAM, ARIZONA. A multiple-arch concrete dam 2146 feet long and 170 feet high above stream bed was completed in 1927 some 35 miles northwest of Phoenix, Arizona. The dam creates a storage reservoir of 173,000 acre-feet for irrigation and power purposes to serve the 40,000 acre project of the Maricopa County Municipal Water Conservation District No. 1. In order to secure sufficient slenderness ratio, the buttresses, 60 feet centre to centre, were built shallow, with double walls 16 feet wide for their full height and battered inside. The clear span of the arches is thus 44 feet, the upper side of the buttresses being closed by flat slabs. The up-stream slope is 9 horizontal to 10 vertical and the arches are 3-centred with a thickness varying with the height. The unique construction and the great height, 252 feet maximum above foundations, made this one of the most notable dams of this type. See description in *Engineering News-Record*, Feb. 2, 1928.

COOLIDGE MULTIPLE-DOME DAM. One of the most interesting and remarkable dams of a novel type ever constructed was this work nearing completion on the Gila River in Arizona. It is an essential part of a project authorized in 1924 to irrigate some 100,000 acres largely Indian lands adjacent to the Salt River Project in Arizona and was being built by the United States Indian Service. Several studies of different types of dam, together with estimates of their relative economy, showed a slight saving for the novel dome type over its nearest competitor, the well-known multiple arch. Three egg-shaped half-domes of 180 feet span and 251 feet high, with joining buttresses, form the main portion of the dam which is about 550 feet long with side hill spillways on either end 166 feet wide. It was claimed that this type offered advantages for certain sites and is subject to comparatively simple calculation. The domes vary in thickness from 4 to 20 feet and are reinforced for temperature changes, no expansion joints being provided except in the buttresses. Under the central dome of the dam a 10,000 kw. hydro-electric power plant is to be built.

STONY GORGE DAM. This work, also a United States Bureau of Reclamation project, illustrates the use of another type of dam. It is a 120-foot-high slab and buttress-type reinforced concrete structure and was being built by the Ambursen Company, being practically completed at the end of 1928. This dam is on the Orland project in California and will furnish a supplemental supply to 20,000 acres already under irrigation.

EARTH DAMS.—HIGHEST HYDRAULIC-FILL DAM, COBBLE MOUNTAIN, MASS. The new Cobble Mountain dam of the Springfield, Mass., Water Works was designed to contain 1,800,000 cubic yards of earth and to be the highest earth dam ever built—245 feet above bed rock—as is shown in the accompanying table of earth dams.

This dam forms part of the additional supply system for this city being developed on Little River, a branch of the Westfield, west of Springfield and above the existing system. The dam

<i>Dam</i>	<i>Spillway ht. above stream bed</i>	<i>Total ht. above stream bed</i>
Cobble Mt., Mass.	215	245
Tilton, Wash.	211	232
Calaveras, Calif.	185	220
Saluda River	200	208
Davis Bridge, Vt.	185	200
Necaxa, Mexico	184	192
San Pablo	185	185
Goose Creek	137	150
Paddy Creek, N. C.	120	130
Gatun, Panama	78	120
A record dam of the rock-fill- earth type is Dix River ..	245	275

was to be located in a narrow gorge and, although 1505 feet wide at the base (toe to toe) was to be only 700 feet long at the crest. Some 22 billion gallons storage is expected and the lake will cover 1120 acres. A separate spillway 800 feet long is provided and a diversion tunnel, 1600 feet long, will be used to carry flows around the dam site during construction and later as an outlet for the dam. Another outlet tunnel, 7105 feet long and $9\frac{1}{2} \times 10$ feet horseshoe section, will convey the water to a point lower down in the gorge at existing works giving a head of 450 feet for power development. Suitable material for the dam was to be hauled about one mile and either was to be sluiced into place from "dissolving boxes" or placed by the semi-hydraulic method of dumping dry at the outer edges and washing into place. It is expected that the work will be completed by October 1930.

TABLE ROCK COVE EARTH DAM. That the stability of the earth embankments of an hydraulic-fill earth dam during construction needs careful observation and attention was amply demonstrated in the slide on the 180-foot Nexaca Dam in Mexico in 1909 and through other similar construction difficulties with this type. In the earth water-supply dam for Greenville, S. C., built in 1925-27, however, another source of danger almost caused a major disaster. The dam was a rolled-fill embankment, not a hydraulic structure, and 140 feet high above foundations. A 42-inch drain pipe, used to divert the stream flowing during construction, was closed by a valve at its lower end, at the downstream toe of the dam. A break in this drain, which, of course, was under full water pressure, caused a large slide in the dam with the reservoir almost full. The dam held while the stored water was slowly drawn off.

See also **RECLAMATION and WATER SUPPLY.**

DANISH LITERATURE. See **SCANDINAVIAN LITERATURE.**

DANZIG. A free city, which, with its surrounding territory, was established by the Treaty of Versailles in 1919. It was formerly a part of the German Empire. Area, about 754 square miles; population, Aug. 31, 1924, 384,000. The administrative district of the City of Danzig had a population of 207,100. The city is the chief outlet for the commerce of Poland and continues to maintain its century-old position of being the leading grain port of the Baltic. Shipping is the chief industry, manufacturing being engaged in largely for local consumption.

In 1926, 5967 vessels of 3,432,480 tons entered and 5963 vessels of 3,395,840 tons cleared from the port. During the calendar year 1927, 1,517,194 tons of goods were imported through Danzig and 6,380,419 tons exported. Figures for the first

half of 1928 indicated that the totals for that year would be much greater both for imports and exports. The budget for the fiscal year Apr. 1, 1927, to Mar. 31, 1928, balanced at 113,209,220 gulden. The government of the free city is in the hands of a High Commissioner appointed by the League of Nations. Its constitution approved by the League May 11, 1922, provides for a legislative assembly of 120 members elected for four years, a senate consisting of 20 members, and a president and vice president. The senate is the highest authority in the city and holds secret sessions. High Commissioner in 1928, Dr. Van Hamel.

DARTMOUTH COLLEGE. A non-sectarian institution for the higher education of men, at Hanover, N. H.; founded in 1769. The 1928 autumn session had an enrollment of 2244 students, most of whom were working for the regular college degree, the exceptions being: 20 graduate students; 39 in the medical school; 17 in the Thayer School; and 106 in the Tuck School. There were 261 members on the faculty. The productive funds amounted to \$10,000,000. The library contained 240,000 volumes. During 1928 the Fisher Ames Baker Memorial Library, the gift of George F. Baker of New York, was completed at a cost of \$1,000,000, also a laboratory for the natural sciences, and a new dormitory; while the Carpenter Art Building, the Sanborn English House, and two dormitories were under construction. Admission to Dartmouth College is effected under a selective process, with due weight given to scholarship, character, qualities of leadership, and apparent ability to profit by a college education. A revised system was in force during 1928, providing, among other things, for special treatment for students of high grade and for the granting of but one degree, Bachelor of Arts. President, Ernest Martin Hopkins, A.M., Litt.D., LL.D.

DARWIN MEMORIAL. See **ZOOLOGY.**

DATE SCALE ERADICATION. See **ENTOMOLOGY, ECONOMIC; HORTICULTURE.**

DAVIES, ARTHUR B. American painter, died in Italy, Oct. 24. Born at Utica, N. Y., in 1862; he studied under Dwight Williams and at the Art Institute, Chicago, and at New York, following the romantic school of painting. He first exhibited at the International Society of Sculptors, Painters, and Gravers, in London. The originality of his painting was recognized at his opening New York exhibition, in 1899. He thereafter avoided regular annual exhibitions, but arranged special displays throughout the United States, notably: that at New York in 1901 in which "Spring's Renewal," and "The Breath of Light" appeared; that at the Pennsylvania Academy of Fine Arts, in 1908, which included "The Girdle of Ares," acquired by the Metropolitan Museum of Art in 1914, and "Visions of the Sea"; and that at the Art Institute of Chicago in 1911, showing "Maya, Mirror of Illusions," purchased by the Institute, and "The Hunter of Starlands." Mr. Davies was also represented in other permanent collections, one of the most important groups being his four paintings, including "Children of Yesterday," which hang in the Brooklyn Museum. He won the silver medal at the Buffalo exposition in 1901, received honorable mention at the Carnegie Institute, Pittsburgh, in 1913, and in 1916 was awarded the first W. A. Clark prize, and the Corcoran gold medal.

Mr. Davies was considered by many a leader in imaginative painting, and one of the most individual of the American artists, although his critics believed that his abstract depictions were slightly precious. His coloring and tonal effects were not excelled by the "modernists" whose work he encouraged and whose influence was noted in the mathematical construction of his later paintings. He was largely responsible for introducing the modernists to the American public by leading in the organization of the International Exhibition at New York in 1913. The following year Mr. Davies exhibited a series of his own cubist paintings, including, "The Great Mother," at the Montross Gallery, N. Y. Others of his later romantic, but more intellectual paintings, are "Sea, Wind, and Sky"; "Strewing Dust"; and "Orchard of Pleasant Bounties."

DAVIES, DAVID CHARLES. American museum director, died at Chicago, Ill., July 14. He was born at Aberystwith, Wales, July 23, 1866, and was educated at the University College School, London, and at the University College School of Wales. He went to the United States in 1888, and was employed by Marshall Field & Company of Chicago as a clerk. Soon afterward he became a bookkeeper, and in 1894 he became connected with the Field Museum of Natural History, Chicago, as an accountant. Mr. Field chose him to install a system of accounting at the museum and later he devised recording and purchasing systems. He became first secretary of the museum and then director and a trustee in 1921. He received much of the credit for the high place of the museum in the world of science and exploration.

DAVIS, HENRY WILLIAM CARLESS. English historian and biographer, died at Edinburgh, Scotland, June 28. He was born in 1874, and was educated at Weymouth College and at Balliol College, Oxford, of which he was a scholar in 1891-95, and became fellow in 1902 (after being fellow of All Souls' from 1895 to 1902). In 1925 he was elected an honorary fellow of Balliol and a fellow of the British Academy. He was professor of modern history at the University of Manchester, 1921-25, and was made regius professor of modern history at Oxford in 1925 and curator of the Bodleian Library in 1926. As a historian his work was marked by solid scholarship, and he possessed the gift of making his writings readable and interesting to the layman. He was highly regarded at Oxford and elsewhere as an adviser of his students and a guide into the fields of research. From 1902 until his death he was director of the *Dictionary of National Biography*. During the World War, Professor Davis served in the War Trade Intelligence Department and on the War Trade Advisory Committee, and won the decoration of a Commander of the Order of the British Empire. Professor Davis published a long list of works, especially on mediæval history, and contributed to the *English Historical Review*, *The Cambridge Modern History*, *Helmholtz's History of the World* (English edition), and *Mowbray's Dictionary of Church History*. Among his books may be mentioned: *History of Balliol College* (1899); *Charlemagne* (1900); *England Under the Normans and Angevins* (1905); a manual on *Mediæval Europe* (1911); *Regesta Regum Anglo-Normannorum* (1913); a new edition of *Stubbs's Select Charters* (1913); *Political Thought of Treit-*

schke (1914); (in collaboration with others) *Why We Are at War* (1914). He also contributed to the *History of the Peace Conference* (ed. Temperley, 1920, etc.). He edited *Oxford Pamphlets* (1914-15).

DAVIS, SIR MORTIMER BARNETT. Canadian capitalist, died at Cannes, France, March 22. He was born at Montreal, P. Q., in 1866, and was educated at the public and high schools of his native city. He was one of the leading financiers of the Dominion, and was frequently termed "the tobacco king of Canada" and "the Rockefeller of Canada." He was president of the Imperial Tobacco Company of Canada, Ltd.; chairman of the Canadian Industrial Alcohol Company, Ltd.; a director of the United States Rubber Company; chairman of the Consolidated Asbestos Company, Ltd., and had extensive interests in other industrial concerns, as well as being a director of the Royal Bank of Canada and of the Crown Trust Company of Montreal. He was deeply interested in horse racing, and owned several horses which won important stakes on the turf of America and Europe. His gifts to philanthropic institutions were numerous and large.

DAWES PLAN. The fifth annuity year under the Dawes Plan began Sept. 1, 1928. This date marked the first year in which the standard annuity of 2,500,000,000 gold marks was payable and was regarded as the test year of the plan. The Agent-General of Reparations Payments announced that in the fourth year of the Dawes Plan, which ended on Aug. 31, 1928, Germany had made all payments fully and punctually as they became due and that transfers had been made during the year to an amount substantially equivalent to the year's receipts.

The reparations payments actually received from Germany within the fourth annuity year amounted to about 1,746,000,000 gold marks, including two payments in completion of the third annuity, to the amount of 75,000,000 marks, which was not received until September, 1927. The fourth annuity itself amounted to 1,750,000,000 gold marks, and the two payments necessary to complete it fell due in September, 1928. The first of these payments, representing the final installment of the service of the German railway bonds, was made on September 1, to the amount of 55,000,000 marks. The final installment of the year's contribution from the transport tax, amounting to 24,000,000 marks, was paid on September 21.

The total transfers made during the fourth annuity year amounted to approximately 1,739,000,000 gold marks. The transfers in foreign currencies aggregated about 943,000,000 marks, or 54.23 per cent of the total transfers, while the transfers made by means of Reich mark payments in Germany amounted to about 796,000,000 or 45.77 per cent of the total transfers. Of the foreign currency transfers the largest item was 460,405,000 marks cash. At the close of business on Aug. 31, 1928, the cash balance in the Agent-General's account amounted to about 189,500,000 gold marks, as compared with the available balance of about 185,500,000 marks at the beginning of the year.

DAWSON, dō'sūn WILLIAM JAMES. English clergyman and author, died at Nelson, B. C., Canada, August 23. He was born at Towcester, Northamptonshire, Nov. 21, 1854. After he had left Didsbury College, Manchester, Dr. Dawson

entered the Wesleyan ministry in 1875. In 1892 he resigned to enter the Congregational ministry, and accepted an appointment at the Highbury Quadrant Congregational Church, London, which he held until 1904. He came to Washington, D. C., in 1891 as a delegate of the Methodist Ecumenical Council. He returned to America in 1905 and lectured throughout the United States. In 1912 he became pastor of the First Presbyterian Church of Newark, N. J., where he remained until 1925, when he was made pastor-emeritus. Dr. Dawson, who was the father of Coningsby Dawson, the author, in addition to his church and evangelical work, lectured frequently on history and literature, and wrote extensively in nearly every field of literature. His writings include: *A Vision of Souls* (poems, 1884); *Quest and Vision, Essays on Life and Literature* (1886, enlarged ed. 1892); *The Makers of English Poetry* (1890); *The Redemption of Edward Strahan, A Social Story* (1891); *London Idylls* (1895); *The Story of Hannah* (1896); *The House of Dreams* (1897); *Judith Boldero, A Tragic Romance* (1898); *Makers of English Prose* (1899); *Savonarola, A Dream* (1900); *The Man Christ Jesus* (1901); *The Reader's Library* (with his son, Coningsby W. Dawson, 1909); *The Book of Courage* (1911); *The American Hymnal* (1913); *America, and Other Poems* (1912); *Robert Shenstone; A Novel* (1917); *The Father of a Soldier* (1917); *The War Eagle* (1918); *Chalmers Comes Back* (1919); *The Borrowdale Tragedy* (1920); and *The Autobiography of a Mind* (1925).

DAY, WILLIAM A. American lawyer and capitalist, died at St. Augustine, Fla. April 9, at the age of seventy-seven. He was born at Wilmington, Del. He studied law at Harvard and afterward practiced at Champaign, Ill., of which town he was elected mayor in 1883. He served two terms in the Illinois Legislature, and in 1885 was appointed auditor of the U. S. Treasury Department. He remained in that office until 1889. As special assistant to the attorney-general of the United States (1901-03), he aided in and had charge of the prosecution of anti-trust cases under the interstate commerce and anti-trust acts. In 1904 he was sent as head of a mission to France to conclude the purchase of the Panama Canal, and on his return was sent by President Roosevelt to Alaska to investigate charges of oppression against government officials. Mr. Day served as vice president of the Equitable Life Assurance Society of the United States from 1906 to 1911 and as president until his retirement from that office in 1927. From that time until his death he was chairman of the board of directors of the society.

DEAF, SCHOOLS FOR. See EDUCATION.

DEAN, BASHFORD. American zoölogist and armor expert, died at Battle Creek, Mich., December 7. Born at New York, Oct. 28, 1867, he was graduated from the College of the City of New York, in 1886, and received the A.M. degree from Columbia in 1889, and the Ph.D. degree in 1890, also studying at Munich and Naples. Becoming a member of the Columbia faculty in 1891, he was instructor in biology until 1896, adjunct professor of zoölogy, 1896-1904, professor of vertebrate zoölogy, 1904-27, and honorary professor from 1927 until his death. He was also professor of fine arts at New York University in 1925. Being assistant on the New York State Fish Commission, 1886-88, he served on the United

States Fish Commission as assistant, 1889-92, and as biologist, 1900-01, making special investigations in Europe and Japan. Dr. Dean was a director of the biological laboratory of Cold Spring Harbor, N. Y., in 1890, and he became a member of the advisory board of the New York Aquarium in 1902. The American Museum of Natural History appointed him curator of herpetology and ichthyology in 1903, naming him honorary curator of the latter subject in 1926; the "Hall of Fishes," opened at the museum in December, 1928, was largely the result of his work. He began his association with the Metropolitan Museum of Art in 1903, and, as curator of arms and armor, brought this department into world fame, acquiring, by careful research, one of the most complete antiquary collections in existence. In 1927, he was made a trustee of the museum. Dr. Dean was also trustee of the New York Museum, president of the Dyckman Institute, and curator of the Dyckman House Museum. Besides belonging to several American scientific associations, he was a corresponding member of the zoölogical societies of Paris, Moscow, and London. He was awarded the Legion of Honor by France, in recognition of his contributions to zoölogy. As major in the Ordnance Department of the U. S. Army, and adviser on armor to the War Department, he was active during the World War, being sent in 1917 with a military mission to France, Belgium, and England. Dr. Dean wrote many books and papers on palæichthyology and embryology of fishes, including the textbook, *Fishes, Living and Fossil* (1895), and compiled a bibliography of fishes with 50,000 titles. He also published many dissertations on arms and armor.

DEATH RATE. See VITAL STATISTICS.

DECEPTION ISLAND. Deception Island (Lat. 63° S; Long. 60° 15' W.) near the northern extremity of Graham Land is a volcanic island into whose breached crater the sea has entered and provided an excellent land-locked harbor for the whaling vessels congregating in the adjoining waters each year. Fumaroles and hot springs give evidence of recent volcanic activity. This island was being used as a base for the Wilkins-Hearst Antarctic Expedition. See POLAR RESEARCH.

DEFECTIVES, SCHOOLS FOR. See EDUCATION.

DELANY, HENRY BEARD. American churchman and suffragan bishop of North Carolina in the Protestant Episcopal Church, died at Raleigh, N. C., April 14. He was born at St. Mary's, Ga., of negro parents, and was a grown man and successful at his trade of stonemason at Fernandina, Fla., when he entered as a student at St. Augustine's School, Raleigh. On his graduation in 1885 he became a teacher at the school, and he advanced to become, in time, its vice principal. He was ordained a deacon in the Protestant Episcopal Church in 1889 and a priest in 1892. In 1908 he was appointed archdeacon of colored work in the diocese of North Carolina, and in 1918 he was elected suffragan bishop for colored work, the dioceses of South Carolina and North Carolina agreeing to coöperate in his support. In 1911 he received the degree of D.D. from Shaw University.

DELAWARE. POPULATION. According to the 14th Census, the population of the State on Jan. 1, 1920, was 223,003. The estimated population on July 1, 1928, was 244,000. The capital is Dover.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Corn	1928	136,000	4,448,000	\$3,949,000
	1927	135,000	4,725,000	3,780,000
Wheat	1928	102,000	1,836,000	2,295,000
	1927	98,000	1,862,000	2,328,000
Hay	1928	83,000	141,000 ^a	2,281,000
	1927	83,000	147,000 ^a	2,373,000
Potatoes	1928	7,000	658,000	494,000
	1927	6,000	714,000	571,000
Sweet potatoes	1928	7,000	980,000	784,000
	1927	8,000	880,000	616,000

^a tons.

MINERAL PRODUCTION. Both the aggregate value of clay products, the leading classification in the State's mineral industry, and that of stone, declined for 1926, as compared with 1925. Clay products totaled \$156,897 in 1926; in 1925, \$271,701. Production of stone was \$157,637 in value in 1926; in 1925, \$219,054. The total mineral production of the State was \$375,945 in 1926; in 1925, \$539,261.

FINANCE. Expenditures in the year ending June 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of State governmental departments, \$4,618,650 (of which \$1,403,371 was for local education); for interest payments on debt, \$448,601; for permanent improvements, \$2,085,545; total, \$7,152,796 (of which \$1,956,444 was for highways, \$227,219 being for maintenance and \$1,729,225 for construction). Revenues were \$7,786,110. Property and special taxes formed 61.4 per cent of the total; departments' earnings and remuneration for services rendered by officials, 4.9; sales of licenses and a sale tax on gasoline, 21.2. Property assessed valuation was \$256,906,080; State taxation thereon, \$642,265. Net State funded debt was \$8,878,372. The chief part of the debt was for highways.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 331.79. No additional trackage was reported as built in the course of 1928.

EDUCATION. There was put into effect in 1928 a building programme based on a State appropriation of \$2,000,000, of which the object was to enable the school districts to conform to a desirable standard in regard to buildings. For the year 1927-28 the enrollment in the public schools of the State was 40,801. Of this number 34,450 were enrolled in the elementary schools and 6351 in the high schools. Expenditure for public school education in the State in 1927-28 totaled \$3,168,855.32. Salaries of teachers averaged \$1187 a year.

CHARITIES AND CORRECTIONS. The general welfare activities of the State in 1928 were under two bodies—the State Board of Charities and the State Health and Welfare Commission. There was also a Mothers' Pension Commission, charged with specific duties in regard to the mothers' pension system. Under control in each case of a separate board were the following institutions: Delaware State Hospital (insane), Farnhurst; Delaware Industrial School for Girls, Claymont; Industrial School for Colored Girls of Delaware, Marshallton; Ferris Industrial School, near Marshallton; New Castle County Farm for Women; Retention Home for Juveniles. There were also commissions for the blind and the feeble-minded. The Delaware Colony for Mental Defectives had,

Jan. 1, 1928, 115 inmates; the Delaware State Hospital, 579 patients (mental).

POLITICAL AND OTHER EVENTS. The new State permanent registration law went into operation in July, at the time of registration for the primaries and general election. It provided that the registrar must by August 22, give warning to all who had previously registered, but had failed to vote at the last general election, that such persons must reënroll; the law, however, failed to provide funds for the rendering of this notice. A survey was undertaken at the choked inlet of the Indian River, on the coast of Sussex County, to determine the possibility of reopening the inlet by the expenditure of a \$40,000 appropriation provided by the State Legislature. One of the oldest of the remaining historic buildings of Wilmington, the First Presbyterian Church, standing on a site acquired in 1740, was sold for commercial purposes at a reported price of \$750,000. The Regional Planning Federation, a body concerned with common interests of adjoining areas in Pennsylvania, Delaware, and Maryland, recommended the development of a system of by-pass highways to carry through highway traffic in these areas without overrunning the larger cities.

ELECTION. The popular vote for President at the election of November 6 gave Hoover (Rep.), 68,680 and Smith (Dem.), 36,643. John G. Townsend, Republican, was elected senator for the ensuing regular term, defeating Senator Thomas F. Bayard, Democrat, the incumbent, who ran for reelection. Senator Bayard gained a larger vote than the Democratic Presidential nominee, but was nevertheless severely defeated. Robert G. Houston, Republican, was elected United States Representative. C. Douglass Buck, Republican, was elected governor. The Republican candidates for the other State offices were likewise victorious. Henry Hazel was elected lieutenant-governor; Howard M. Ward, treasurer; Edward Baker, auditor; Reuben Satterthwaite, Jr., attorney-general.

OFFICERS (1928): Governor, R. P. Robinson; Lieutenant-Governor, J. H. Anderson; Secretary of State, S. D. Townsend; Treasurer, Howard M. Ward; Auditor, Edward Baker; Attorney-General, C. A. Southerland; Commissioner of Insurance, James G. Shaw; State Bank Commissioner, Harold W. Horsey.

JUDICIARY. Chancellor, Josiah O. Wolcott; Chief Justice, James Pennewill; Associate Judges, Richard S. Rodney (at large), Herbert L. Rice, William Watson Harrington, Charles S. Richards.

DE LIMA, ELIAS. American banker, died in Mexico, November 22. He was born at Curaçao, Dutch West Indies, in 1863, and was educated in Germany. Moving to New York, he was employed by the exporters, D. A. De Lima & Company, in 1882, being made a member of the firm six years later. He became a director of the Empire Trust Company, and of the New York Board of Trade and Transportation, and in 1908 he was chosen president of the Hungarian-American Bank. He went to Mexico City in 1910, as the representative of American bankers, and interested himself in various Mexican affairs, becoming president of the Banco de Comercio y Industria. During the insurrection against President Francisco Madero, in 1913, Mr. De Lima supported the Government. After Plutarco Elias Calles was elected President in July, 1924, he ap-

joined the banker his financial adviser, and requested him to establish in Mexico a federal reserve system modeled on that of the United States. Mr. De Lima retained his position as adviser to the administration until his death, having represented Mexico in several questions of international finance. He was made a director of the National Railroad.

DELINQUENTS, SCHOOLS FOR. See **EDUCATION.**

DEL RIO, J MORA Y. See **MORA Y DEL RIO, J.**

DE MOLAY, ORDER OF. A non-sectarian secret organization for young men between the ages of 16 and 21; founded in March, 1919, by Frank S. Land, at Kansas City, Mo., and named in honor of Jacques De Molay, the last military Grand Master of the Knights Templar. The members are pledged to the precepts of love of parents, reverence, patriotism, cleanliness, courtesy, comradeship, fidelity, and to the promotion of the public school system. The Order is governed by a Grand Council of Freemasons, while the chapters are sponsored by Masonic bodies. In November, 1927, there were 1632 chapters, 250,000 members, and more than 100,000 De Molays who had outgrown active membership. The headquarters of the Order are in its own building, The Shrine of Youth, at 201 E. Armour Boulevard, Kansas City, Mo. Frank S. Land, the founder, was Grand Sorcerer of the Order in 1928.

DENGUE, Den'gá. This disease which again came into prominence in connection with the epidemic in Greece, visited the United States as recently as 1922, when it attacked chiefly the region between Alabama and Texas inclusive, the city of Galveston alone having 30,000 victims. It has often been confused with other epidemics, notably with mild influenza with which it has many points in common, such as attacking a large number of people simultaneously, and having hardly any mortality. Severe pains in the muscles are common to both and in both the course is relatively brief. Dengue, of course, bears no resemblance to the virulent type of influenza. The chief dissimilarity is in the mode of transmission, for while influenza spreads by direct contact, dengue is mosquito-borne. Certain resemblances in the epidemicity of the two diseases once led to the belief that dengue is a mild form of yellow fever. The disease occasionally appears in more northerly regions during the mosquito season.

THE EPIDEMIC IN GREECE. The first expert account of the epidemic of dengue in Greece was supplied to the *Deutsche medizinische Wochenschrift* (Sept. 28, 1928) by Dr. Moutoussis of Athens. The earliest cases were reported in September, 1927, and it continued to diffuse itself until December. There were several thousand victims during this period. The infection was traced to a family who had moved to Athens from Alexandria. The disease reappeared about Easter and as before continued to diffuse itself slowly. By the end of August hardly a household in Athens had escaped and over half a million cases had developed in the country at large. The clinical picture presented was very polymorphous, and there was a notable tendency to hemorrhages. Although most cases were mild there were many which were severe and the patients were often left with serious nervous symptoms. It is difficult to speak of the mortality for the victims may have been either of advanced age or afflicted with chronic disease. Some alleged fatalities were really due to tropical malaria,

paratyphus, etc. The author, who is a bacteriologist, finally was able to show that the disease is mosquito-borne and transmitted entirely by the species *Stegomyia fasciata*. The author inoculated himself and some volunteers by allowing themselves to be bitten by infected mosquitoes.

DENISON UNIVERSITY. A coeducational Baptist institution of higher education at Granville, Ohio; founded in 1831. The enrollment for the autumn of 1928 was 889, and for the summer session of 1928 it was 160. The faculty in the autumn of 1928 numbered 61, of whom 46 were men and 15 women, and of the total, 9 men and 1 woman were new additions since 1927. Miss Priscilla Fowle, Ph.D., was also added to the staff of the University as Dean of Women in 1928. The productive funds of the institution amounted to \$3,200,000 and the net income to \$239,000. The library was increased from 60,000 to 70,000 volumes during the year. The Whistler Memorial Hospital was ready for occupancy at the end of the year, and among the outstanding changes in the curriculum was the discontinuance of the Military Science Department, following upon the withdrawal of the Reserve Officers Training Corps.

DENMARK. The smallest of the three Scandinavian states; comprising the peninsula of Jutland with its adjacent islands in the Baltic, the Faroe Islands, a part of Schleswig as a result of the plebiscite of 1920 under the terms of the Treaty of Versailles, and Greenland, the only colony or possession. Iceland is a free sovereign State, but united to Denmark in the person of the King of Denmark who is also head of the Government of Iceland. Capital, Copenhagen. See **GREENLAND**; **ICELAND**.

AREA AND POPULATION. The area is 16,568 square miles, including the Faroe Islands, which have an area of 540 square miles; population, according to the census of Nov. 5, 1925, 3,434,555. North Schleswig, which voted in the plebiscite of 1920 to form a part of Denmark, had an area of 1502 square miles and a population in 1925 of 176,433. The islands in the Baltic had an area of 5133 square miles and a population of 1,575,533 in 1925. Of the population more than 95 per cent were born in Denmark. The movement of population in 1926 was: Births, 70,734; deaths, 38,093; marriages, 25,733; emigrants (chiefly to the United States and Canada), 5804. The population of Copenhagen in 1925 was 587,150; with suburbs, 731,496. Other large cities with their 1925 populations are Aarhus, 76,226; Odense, 52,376; Aalborg, 42,812; Horsens, 28,135; and Randers, 26,856.

EDUCATION. Primary instruction is free and compulsory between the ages of seven and 14. In 1926 there were 4493 lower schools; of these 34 were maintained by the National Government, 3852 by the local communes, and 607 were private institutions. The number of pupils in the 4493 schools on Jan. 1, 1926, was 493,237. For higher education there is the University of Copenhagen, founded in 1479, with about 120 professors and 4400 students. There are also many popular high schools, agricultural schools, training schools for teachers, and other technical special institutions.

PRODUCTION. The Danish Government fosters dividing the land into small farm parcels and is opposed to the union of small estates into large holdings. The result is that the land of the coun-

try is greatly subdivided. Of the total area, 80 per cent is productive; about one-sixth of the unproductive area is peat bog. According to the census of July 15, 1927, the extent of the cultivated area in Denmark was as follows: grain areas, 3,198,000 acres; root crop, 1,225,000 acres; other crop, 76,000 acres; green fodder and grass, 2,132,000 acres; fallow land, 207,000 acres; total cultivated area, 6,838,000 acres. The acreage and production of the principal crops in 1926 were as follows: Wheat, 251,554 acres, 238,593 tons; rye, 514,227 acres, 317,015 tons; barley, 770,476 acres, 727,534 tons; oats, 1,047,729 acres, 875,733 tons; mixed grain, 584,652 acres, 488,366 tons; potatoes, 189,283 acres, 811,700 tons. On July 15, 1927, there were in the country 523,785 horses, 2,911,949 head of cattle, 3,728,623 swine, and 18,524,000 hens.

There were according to the latest available statistics 89,175 industrial factories and shops, employing altogether 392,000 persons, of whom 270,000 were actual laborers. Of the total establishments, 26,300 used mechanical power. Danish industrial-production statistics for 1927, published late in 1928 by the Danish statistical department, showed considerable variation in the production of several industries as compared with 1926. In general, however, it was estimated that the production per worker continued to increase slightly. The great diversion, from an increase of 70 per cent to a decrease of 25 per cent for individual branches of industry, was accompanied by corresponding increase and decline in employment of workers. Marked increases in output were shown by the following branches of industry (percentage increase in parentheses): Slaughterhouses (33); cotton mills (20); cable manufacturers (25); and match factories (70). The largest decrease was shown in the manufacture of pianos, production of which dropped 25 per cent. Other industries showing a decline of 10 to 15 per cent were tanneries, glass factories, bicycle factories, and automobile plants. A large number of industries revealed practically no change.

COMMERCE. Denmark's foreign commerce in 1927 showed a slight gain both in respect to imports and exports over that of 1926. The total imports in 1927 were valued at 1,658,008,000 crowns and the total exports at 1,549,048,000 crowns. No later statistics as to details of the foreign trade were available than those given in the preceding YEAR BOOK where an analysis of the 1926 trade will be found.

FINANCE. The deficits that had characterized Danish budgets since 1920 were caused almost entirely by a large excess of expenditures over revenue on capital account. In only one of these years, 1923-24, was there a deficit in the current (ordinary) budget. The deficit on the total budget has decreased steadily, from a figure amounting in 1920-21 to almost 14 per cent of the total expenditures, to less than 1 per cent in 1925-26 and 2 per cent in 1926-27. The Danish budget is prepared on the "net" system; that is, total receipts and expenditures of government enterprises are not shown, only the deficits or surpluses from operation appearing in the budget. Furthermore, since the fiscal year 1925-26, the capital value of government-owned enterprises has been charged at an interest rate of 5 per cent while the book value of State property has been charged 1 per cent for depreciation. Surpluses

or deficits on these accounts in the budget, therefore, are inclusive of such charges.

The budget proposal for 1928-29, with expenditures at 413,800,000 crowns and revenues at 393,600,000, anticipated a deficit of 20,200,000 crowns. Current expenditure, at 332,042,232 crowns, was slightly above estimates for 1926-27 because of a "surplus" of 15,600,000 crowns, although appropriations for the various ministries were generally smaller. Capital expenditure, at 81,800,000 crowns, was considerably reduced. Current revenue, estimated at the same figure as for 1927-28, balanced current expenditure. The budget deficit was therefore caused by a large reduction in capital revenue, which item was estimated to total 61,500,000 crowns. The accompanying table is an abstract of the budget estimates for 1928-29 for current (ordinary) revenue and expenditure:

<i>Current revenue</i>		<i>Kroner</i>
Debit balance of domain revenues	1,590,273	
Debit balance of State undertakings	24,088,304	
Interest (net)	10,425,792	
Balance of funds, etc.	687,809	
Direct and indirect taxes	341,440,044	
Balance of lotteries	2,543,527	
Separate revenues	2,673,637	
Total current revenue	332,042,232	
<i>Current expenditure</i>		<i>Kroner</i>
Civil list and appanages	1,072,000	
Rigsdag	2,150,000	
Council of State	468,157	
Ministry of Foreign Affairs	4,724,697	
Ministry of Ecclesiastical Affairs	2,870,864	
Ministry of Public Instruction	61,515,779	
Ministry of Justice	16,679,805	
Ministry of Interior	67,872,551	
Ministry of Health	41,862,627	
Ministry of Agriculture	11,295,627	
Ministry of War	35,841,478	
Ministry of Marine	22,182,283	
Ministry of Finance	22,844,437	
Ministry of Industry, Commerce, and Navigation	4,690,688	
Greenland	12,329,048	
Pensions	12,329,048	
Total current expenditure	316,430,197	

COMMUNICATIONS. On Dec. 31, 1926, the Danish merchant marine (exclusive of colonies) possessed 1870 vessels of 1,108,300 registered tons gross. In 1926, 33,073 vessels of 10,431,000 tons entered the Danish ports from foreign countries and 34,649 vessels of 10,608,000 tons cleared. The total length of railways open to traffic was 3154 miles, of which 1519 belonged to the State. The total value of state railways up to Mar. 31, 1927, was 432,550,000 crowns.

GOVERNMENT. Executive power is vested in the King who acts through a responsible ministry, but who has no power to declare war or make peace without the consent of the Rigsdag, or Parliament, and the legislative power is vested in the Rigsdag, which is composed of the Folketing (lower house) and the Landsting (upper house). The Folketing has 149 members, of whom 117 are elected on the basis of proportional representation and the remainder divided among the parties not having obtained sufficient returns at the district elections; the Landsting has 75 members, elected indirectly by the voters for the lower house and the former Landsting. King in 1928, Christian X (born Sept. 26, 1870), who succeeded his father, Frederik VIII on May 14, 1912. The ministry, as appointed Dec. 14, 1926, was as follows: President of the Council and Minister of Agriculture, Th. Madsen Mygdal; Foreign Affairs,

L. J. Moltesen; Interior, Oluf C. Kragh; Health, V. Rubov; Justice, S. Rytter; Defense, S. Brorsen; Public Instruction, J. Byskov; Ecclesiastical Affairs, F. Braun-Rasmussen; Public Works, J. P. Stensballe; Finance, N. Neergaard; Industry, Commerce and Navigation, M. Slesbager.

HISTORY. Denmark enjoyed a quiet year. In the summer the Government determined to appoint a non-partisan commission to investigate conditions in Schleswig, which was turned over to her from Germany as a result of the plebiscite of 1920. In recent years the lot of the people of the district has not been very prosperous, chiefly because of economic conditions due to the continued depression in agriculture. There had been considerable talk of an economic union with Germany or the creation of an autonomous district. It appeared that the Danish Government was sincere in its desire to get at the root of conditions in the district. Attempts to organize a revolt in the province failed. The United States and Denmark signed a treaty of arbitration in June.

DENSITOMETERS. See PHOTOGRAPHY.

DENTON, OLIVER. An American pianist, died in Paris, July 19. He was born in Hempstead, N. Y., March 6, 1886. After completing his musical education at the National Conservatory in New York, where he was a pupil of Safonov, he continued his pianistic studies in Paris, under Isidore Philipp, and in Berlin, under Paul Goldschmidt. He made his European debut with the Berlin Philharmonic Orchestra, Feb. 7, 1913, and his American debut in recital in New York in 1916. The greater part of his time he spent making extensive tours of Europe and the United States. In 1925 he joined the faculty of the Institute of Musical Art.

DENVER, UNIVERSITY OF. A coeducational institution of higher learning at Denver, Colo.; founded in 1864. The registration for the autumn term of 1928-29 totaled 2714, distributed as follows: College of liberal arts, including pharmacy and engineering, 1149; school of dentistry, 106; school of law, 83; City College, 553; school of commerce, 823; school of pharmacy, 46; school of engineering, 151; and summer school of 1928, 820. The faculty had 177 members in the autumn of 1928. The library contained more than 50,000 volumes. Chancellor, Frederick Maurice Hunter, A.M. Ed.D.

DEPAUW UNIVERSITY. A coeducational institution for higher learning at Greencastle, Indiana, under the auspices of the Methodist Episcopal Church; founded in 1837. For the autumn session of 1928 the enrollment was 1616, including 907 men and 709 women. Of this number 1445 were registered in the college of liberal arts and 171 in the school of music. In the summer session of 1928 there were 133 students. The college of liberal arts had a faculty of 91 and the school of music, 16. During the year, 20 new faculty members were appointed as follows: The president; a professor of zoölogy; a professor and two assistant professors of military science and tactics; an associate professor of education; an assistant professor of comparative literature; an assistant professor of psychology; and 12 instructors. The productive funds of the University were \$5,297,853, including \$2,124,573 assets of the Rector Scholarship Foundation. The income from productive funds amounted to \$279,755, of

which a total of \$121,477 was for scholarships only. Total current income for the year was \$626,018. Lucy Rowland Hall, a dormitory for women, and the gift of the late Edward Rector, founder of the Rector Scholarship Foundation, was dedicated at the inaugural ceremonies in 1928. G. Bromley Oxnam, D.D., was inaugurated president of DePauw University on Oct. 12, 1928, at ceremonies presided over by the Hon. Roy C. West, Secretary of Interior and president of the Board of Trustees of the University, and participated in by Bishop Edwin Holt Hughes of the Methodist Episcopal Church, a former president of DePauw. Dr. Oxnam chose as the subject of his inaugural address, "Education and the New Society."

DEPEW, CHAUNCEY MITCHELL. American lawyer, railroad president, politician, and orator, died at New York, April 5. He was born at Peekskill, N. Y., Apr. 23, 1834. He was graduated from Yale College in 1856, was admitted to the bar two years later, and soon took an active part in politics. He had practiced debating while in college, and he early evinced the oratorical gifts that made him one of the most prominent and popular speakers of America. He was a member of the Republican party almost from its birth. His first political office was that of member of the New York State Assembly, to which he was elected in 1861 and 1862. In the following year he was elected Secretary of State of New York, holding the office for two years. He resigned to resume his law practice. President Johnson appointed him minister to Japan, and the Senate confirmed the appointment, but Mr. Depew declined the office, preferring to accept an offer to become attorney for the New York & Harlem R. R. This was the beginning of his connection with the New York Central system, which lasted from Jan. 1, 1866, until his death.

His legal work for the railroad did not preclude political activity, however, and in 1872 he was the unsuccessful candidate for Lieutenant-Governor of New York on the Liberal Republican ticket. He was a delegate to every national Republican convention from 1860 to 1924, and a prominent figure at these quadrennial assemblages until advancing years compelled him to curtail his activities. He placed Benjamin Harrison in nomination in 1888 and Levi P. Morton in 1896; in the former year Mr. Depew himself received 99 votes for the Presidential nomination. President Harrison offered to him the portfolio of Secretary of State, but he declined it. In 1899 Mr. Depew was elected Senator from New York, and he was reelected in 1905, serving until 1911. He had declined the office in 1885, the year in which he became president of the New York Central.

In 1869 Mr. Depew became counsel for the New York Central R. R., and in 1882 he was elected second vice president of the road, when it absorbed all the Vanderbilt lines. Three years later he succeeded to the presidency, which he held until 1898, when he resigned to become chairman of the board of directors of the entire Vanderbilt system. This chairmanship he retained, despite his advanced years, until he died, and he attended to the duties daily, with few absences.

It was as an orator that Mr. Depew was known best to the public, and for several decades he was probably the foremost after-dinner

speaker in America. He was frequently called upon to deliver addresses on formal occasions, and was the principal speaker at the Washington Centennial celebration at New York in 1889, at the unveiling of the Statue of Liberty, in New York Harbor, and at the dedication of the World's Columbian Exposition, Chicago, 1893. He delivered orations at the memorial services for President Garfield and General William T. Sherman.

Mr. Depew was an active worker in the cause of good feeling between England and America and was prominent in the work of the Pilgrims and similar societies. Yale University conferred on him the honorary degree of LL.D. in 1887, and France made him an officer of the Legion of Honor. He published *Some Views on the Threshold of Fourscore* (1914) and *Speeches and Literary Contributions at Fourscore and Four* (1918).

DERBY. See RACING.

DE ROBECK, də rō'bĕk, SIR JOHN MITCHEL. British naval officer, died at London, January 20. He was born, of Swedish descent, at Naas, Ireland, June 10, 1862, and entering the Royal Navy as a cadet on H.M.S. *Britannia* in 1875, advanced through successive grades until in 1897 he was put in command of the destroyer, *Desperate*. In 1911 he was appointed rear-admiral, and the following year he received the newly created post of admiral of patrols. When Great Britain entered the World War, Admiral De Robeck was placed in command of the northern mid-Atlantic station and captured several German merchant steamers. From March, 1915 until January, 1916, he commanded the Allied naval forces on the Dardanelles Expedition, having succeeded Vice Admiral Carden during the early part of the campaign. After the fleets' withdrawal from the Straits, Admiral de Robeck in 1916 was given the command of the second battle squadron of the Grand Fleet, which he held until the end of the war. He then returned to the Mediterranean as commander-in-chief, and from 1922 until 1924 he commanded the Atlantic Fleet. Finally, in 1925, he was appointed admiral of the fleet. In recognition of his war-time services, Admiral de Robeck was decorated with the French Legion of Honor, the First Class Sacred Treasure of Japan, and the Grand Cross Order Crown of Italy. Great Britain created him a Knight Commander of the Bath in 1916, a baronet and a Knight of the Grand Cross of Saint Michael and Saint George in 1919, a Knight of the Grand Cross of the Bath in 1921, and a Knight of the Grand Cross of Royal Victorian Order in 1924.

DESTICKER, dēs tī kă', PIERRE-HENRI. French soldier died at Paris, November 26. He was born at Avesnes, Nord, Mar. 4, 1866, and attended the lycée de Douai, the École Bosquet, and the École Polytechnique. A major of artillery at the opening of the World War, he was detailed later to staff work. He was appointed to increasingly responsible positions, holding the rank of general by the end of the war. He served with Marshal Foch, when he was president of the allied military committee at Versailles. He also accompanied Marshal Foch on his visit to the United States in 1921. In 1924 he was made chief of staff. Desticker gave support to the Herriot government in 1924 in the maintenance of its liberal readjustment policy, when he announced that Marshal Foch

had never considered the Ruhr occupation necessary as a military defense. Desticker was commissioned lieutenant general in 1925. In the same year the League of Nations appointed him president of a commission to investigate German armaments.

DESTROYER LEADER. See NAVAL PROGRESS.

DETROIT. See MICHIGAN.

DETROIT INSTITUTION OF ARTS. See ART EXHIBITIONS; ART MUSEUMS.

DETROIT, UNIVERSITY OF. An institution of higher education at Detroit, Mich., under the auspices of the Roman Catholic Church and conducted by the Jesuit Fathers; founded in 1877. In the autumn of 1928 there were 3044 students registered for the college courses, distributed as follows: Arts and Sciences, 528; engineering, 1060; commerce and finance, 958; law, 211. In addition, there were 332 students enrolled for the high-school course. In the summer session 197 students were enrolled. The faculty, not counting those in the high-school, numbered 181. The productive funds in 1928 totaled \$643,213.35. There were 50,000 volumes in the library. President, the Rev. John P. McNicholas, S.J., Ph.D., LL.D.

DEUTSCH, doich, FELIX. German industrialist, chairman of the board of the Allgemeine Elektrizitäts Gesellschaft, died at Berlin, May 19. He was born at Breslau, Germany, May 16, 1858. He was closely associated for many years with the late Walter Rathenau, with whom he founded the German Edison Company. This expanded into the famous "A. E. G.," the General Electrical Company of Germany. When Rathenau was assassinated in 1922, Deutsch succeeded him as president. He had been trained in early life as an engineer. He was deputy chairman of the Central Association of the German Electro-Technical Industry, a privy commercial counselor and a member of the Business Council of Germany. Dr. Deutsch visited the United States in 1927 and delivered lectures on German industrial conditions and his observations in America.

DEVOY, də'voi, JOHN. Irish patriot, died at Atlantic City, N. J., September 29. He was born at Kill, County Kildare, Ireland, Sept. 3, 1842, and educated at Dublin. He was an active worker for Irish freedom, starting as a member of the Irish Republican Brotherhood when he was nineteen years old. He joined the French Legion, 1861, and after a year in Algeria, he returned to County Kildare, and became an active leader in the brotherhood at Naas. He was intrusted by the Fenians in October, 1865, to incite and organize Irishmen in the British Army, and he succeeded so well that in September of that year the English authorities issued a warrant for his arrest. He escaped to Dublin at first, but was captured in February, 1866, and a year later sentenced to fifteen years imprisonment, having pleaded guilty at his trial, in order to attempt an escape, which failed. Devoy served five years of his term and was then allowed to leave prison on the condition that he pass the remaining ten years of his sentence in the United States. He spent the first years of his exile working on New York and Chicago newspapers. Continuing his activity in behalf of Irish independence, he was one of the leaders in the arrangements for *The Catalpa*, which rescued Irish prisoners

from Australia, 1876. He also visited Ireland secretly, 1879, and he became editor of the Irish-American paper, *The Gaelic American*, published in New York, at its foundation in 1903. He visited the Irish Free State in 1924, and was honored for his many services.

DIABETES, dī'a-bē'tēz. *Diabetes in Childhood*. The *Journal of the American Medical Association* for June 9, 1928, contains two references to diabetes in childhood. The first is editorial comment on a paper by Boyd and Nelson of Iowa City on the growth of diabetic children who had been profiting in a manner almost miraculous from the insulin treatment. In a group carefully studied over sufficient intervals, these children were found to grow normally both as to height and weight. There is even a superiority in this respect over normal children, due naturally to the great care exercised which includes the most careful feeding. Of course the ultimate fate of these children cannot be known, but the gain was great, for left to themselves these subjects could not thrive like normal children.

The second reference to diabetic children is an original article by Boyd (already mentioned) and Drain on the arrest of dental caries in childhood. It was noted that certain children to be discussed later, appeared to have undergone a spontaneous arrest of caries. There were 28 of these children and, after having received the report of the dentists, the authors were surprised to find that members of the group were all diabetics who had been for months under a special regimen of insulin and a diet rich in mineral salts and vitamin. In other words despite diabetes it is possible to render these children superior in certain respects to the average by purely artificial resources. See also **FOOD AND NUTRITION**.

DIAMONDS. An outstanding feature of the diamond industry was the controlling forces which had been employed to stabilize it for more than a quarter of a century. During the War, operations were shut down for a year and in the two years of post-war depression there was a curtailment of operations. This policy was employed again in 1928 to remedy conditions of overproduction, which resulted from the enormous output which had occurred in the Lichtenberg district of South Africa. Within a period of six months diamonds valued at more than £4,000,000 were taken from the alluvial fields near the mouth of the Nolloth River, in Namaqualand, and were held by the Union of South Africa Government and were to be disposed of as the market would absorb them, the proceeds to be used in road building and other public improvements. Rigid supervision of prospecting in the future by the Government would make impossible the diamond rushes which had occurred, as well as protect those who had purchased diamonds and held them as a portable and liquid form of wealth. Another restriction placed on the industry was the establishment of a limited diamond-cutting industry at Kimberley.

Diamond sales by De Beers Consolidated for the year ended June 30, 1928, were reported as £3,311,780, as compared with £4,313,674 for the preceding year; net profit was £2,989,874, and dividends paid totaled £1,345,257. Production in Tanganyika decreased slightly. The diamonds produced during the year were of a high quality, exceptional stones valued at \$50,000, \$75,000,

and even \$100,000 each having been produced. The demand was also active. It was reported that only a small part of the diamonds were cut in brilliant form, but that many were emerald cut, or square, while many of the smaller ones were cut in a form known as baguette, which has a back with a brilliant cut, and is therefore heavier. Although a number of larger mines in Africa and elsewhere had been using airplanes to transport diamonds from the mines for some time, transportation of precious stones and jewels between the East and West by air-mail was an innovation of the year in the United States.

The value of diamonds imported into the United States during 1928 was as follows: rough and uncut, 291,302 carats valued at \$11,935,191, as compared with 237,095 carats valued at \$11,470,026 in 1927; diamonds cut but not set, 440,437 carats valued at \$42,396,162, as compared with 445,571 carats valued at \$40,736,351. The largest sources of the cut diamonds were, the Netherlands with 216,018 carats valued at \$21,552,171, and Belgium, with 189,243 carats valued at \$15,529,373.

DIAZ, ARMANDO. Italian soldier, died at Rome, February 29. He was born at Naples in 1861, and was educated at the military schools in Naples and Turin. He served in the Abyssinian campaign, 1895-96, in the Libyan campaign, 1911, and in the war with Turkey, 1911-12. At the outbreak of the World War he was director of military operations on the staff of General Cadorna. He commanded a division on the Carso front after the entrance of Italy into the War, and was promoted to the command of the Twenty-third Army Corps, which penetrated the Selo line on the middle Carso in August, 1917. After the disaster of the Caporetto, when the German and Austrian troops penetrated the Italian line and forced the army to retreat from the Isonzo River to the Piave, Diaz was appointed commander-in-chief to succeed General Cadorna. He made a brilliant defense, and established his reputation as one of the greatest generals of the War. By the end of June, 1918, he had forced back the enemy east of the Piave, and on Oct. 27, 1918, he attacked across that river and was successful all along the line. A week later Austria surrendered. For his services Diaz received the Collar of Annunziata, the highest Italian order, and honors were accorded him by France, England, Belgium, and the United States. He visited the last named country in 1921. In December of that year King Victor Emmanuel created him Duca della Vittoria, and in November, 1924, he and Cadorna were made Marshals of Italy, a new rank. On the advent of the Fascist Government in Italy, Diaz was appointed minister of war, but he was compelled to resign, owing to ill health, in 1924.

DIAZ DE MENDOZA, MARIA GUERRERO DE. See GUERRERO DE DIAZ DE MENDOZA, SEÑORA MARIA.

DICKEY, JAMES EDWARD. American clergyman, bishop of the Methodist Episcopal Church South, died at Louisville, Ky., April 17. He was born at Jeffersonville, Ga., May 11, 1864, and was graduated from Emory College in 1891. He taught at Emory, from 1891 to 1899, successively as adjunct professor of mental and moral science and professor of history and economics. From 1899 to 1902 he was pastor of

Grace Church, Atlanta, Ga., and from 1902 to 1915 president of Emory College. He was pastor of the First Church, Atlanta, 1915-20; secretary of education, North Georgia Conference, in 1921; pastor of the First Church, Griffin, Ga., in 1922, and bishop of the Methodist Episcopal Church South from May, 1922. Kentucky Wesleyan University conferred on him the degree of D.D. in 1903 and Emory University that of LL.D.

DICKINSON, JACOB MCGAVOCK. American lawyer, and secretary of war in President Taft's cabinet, died at Chicago, Ill., December 13. Born at Columbus, Miss., Jan. 30, 1851, he served for a time in the Confederate Army. He was graduated from the University of Nashville in 1871, and after receiving the A.M. degree the following year, studied law at Columbia, the University of Leipzig, the École de Droit, and the Sorbonne. Admitted to the bar in 1874, he practiced at Nashville until 1899, being especially commissioned several times to preside in the supreme court of Tennessee, and serving as assistant attorney-general of the United States, 1895-97. Mr. Dickinson practiced in Chicago, 1899-1909, and during that time was counsel for the United States before the Alaskan Boundary Tribunal, 1903, general solicitor for the Illinois Central Railroad, 1899-1901, and general counsel, 1901-09. Although a Democrat, he supported William H. Taft against William Jennings Bryan in the presidential campaign of 1908, and on Mar. 4, 1909, became secretary of war. He resigned, in May, 1911, and returning to his law practice in Chicago, he became receiver for the Rock Island Lines, 1915-17. He was awarded the LL.D. degree by Columbia and the University of Illinois, 1905, by Yale, 1909, and by Lincoln University, 1917. Besides being at one time vice president of the American Society of International Law, Mr. Dickinson was president of the American Bar Association, 1907-08.

DICKSEE, dik'sē, SIR FRANCIS BERNARD. English painter and president of the Royal Academy, died at his birthplace, London, October 17. He was born Nov. 27, 1853, and after attending the Rev. Mr. G. Henslow's School, he joined the painting classes of the Royal Academy at the age of sixteen. Being especially interested in illustration, he started his career by drawing for magazines and books. He also studied under Henry Holiday, developing his preference for descriptive pictures. He first exhibited at the Academy in 1876, and the following year his "Harmony" was selected as the picture of the year, and purchased with the Chantrey bequest. Dicksee was made an associate member of the Royal Academy in 1881 and became a full member ten years later; he was elected president in December 1924. He was contemptuous of the "ugliness" in the modernist school of painting, and, aside from his portraits, notably his "A Woman in White," 1928, he gained his popularity with romantic representations. Among his best known pictures are "The Ideal" and "The Two Crowns," which hang in the Tate Gallery, London, and "The Symbol," "The Crisis," "The House Builders," and "A Reverie," in the Walker Art Gallery, Liverpool. Other important scattered pictures are, "Romeo and Juliet," "The Love Story," "The Passing of Arthur," "Daughters of Eve," "La Belle Dame Sans Merci," "One of Our Conquerors," "The Confession," "Paola and Francesca," "The Redemption of Tannhäuser,"

"The Funeral of a Viking," "The Shadowed Face," and "The Light Incarnate." Sir Francis was knighted in 1925, awarded the D.C.L. degree by Oxford in 1926, and created a Knight Commander of the Royal Victorian Order in 1927.

DICTIONARY. See PHILOLOGY, MODERN.

DIESEL ENGINES. See INTERNATIONAL COMBUSTION ENGINES.

DIETETICS. DIETARY STUDIES. See FOOD AND NUTRITION.

DIPHTHE'RIA. Dr. D. B. Armstrong, assistant secretary of the Metropolitan Life Insurance Co. supplied some statistics on this affection to the daily press (*New York World*, Sept. 17, 1928,) which had been assembled by boards of health and by his company, and which bear especially on the relation of immunizing campaigns to the death rate. During the two years, 1927-28, there had been an increase in the latter which was much more marked in large metropolitan areas than in suburban and rural districts. Thus in New York City the increase in 1927 as compared with 1926 was about 50 per cent, but in New York State, the upstate regions showed an increase of but 6 per cent. This difference appears to be due wholly to the fact that in the latter area immunization was carried out much more thoroughly than in the congested metropolitan areas where there is marked indifference to this preventive resource. Still more striking were some figures from Illinois, where 44 counties did not report a single death from the disease during 1927 and there was a decline in the annual rate of 6 per cent; while in Cook Co. the deaths increased by nearly 100 per cent over 1926. It was in this favored region of the State that immunization had been carried out intensively. Good results also were traced to immunization in Michigan. In 1927 four cities—New York, Chicago, Pittsburgh, and Montreal—accounted for 88 per cent of the total mortality and it was regrettable that these cities had slighted immunization.

DIRIGIBLES. See AERONAUTICS; MILITARY PROGRESS.

DISARMAMENT. See LEAGUE OF NATIONS; MILITARY PROGRESS, NAVAL PROGRESS; PEACE AND PEACE MOVEMENTS.

DISCIPLES OF CHRIST. A communion known also as the Churches of Christ and sprung from a movement for Christian unity, which arose in American Presbyterian circles at the beginning of the nineteenth century, under Barton W. Stone, in Kentucky, and Thomas and Alexander Campbell in Western Pennsylvania. This is the largest religious body having its origin in America. It was fifth among Protestant communions in the United States in 1928. In polity the churches are congregational. There were six major agencies of the communion in 1928: The United Christian Missionary Society; Board of Education; Board of Temperance and Social Welfare; Association for the Promotion of Christian Unity; Pension Board; and the missionary societies of the several states and provinces of Canada. These agencies are related in an advisory way to the International Convention of Disciples of Christ which meets annually in the late summer or early autumn. The general missionary work of the churches is organized under the United Christian Missionary Society, with headquarters at 222 Downey Avenue, Indianapolis, Indiana. Its board of managers of 120 is

composed of an equal number of men and women. The foreign missionary work in 1928 embraced the Belgian Congo, Africa, China, India, Jamaica, Japan, Mexico, Philippine Islands, Porto Rico, Argentina, Paraguay, and Tibet.

During 1928, the survey volume, *Survey of Service*, was published, covering six years of effort and including an investigation and study of every phase of organizational effort in the brotherhood. It is the most significant phase of self-examination and self-criticism ever undertaken and passes in extent and objective anything so far projected by any communion.

Statistics of the denomination show that during the year there were 5800 baptisms in the foreign fields, a gain of 416 over the previous year. The 512 mission schools had a total enrollment of 15,621. The communion maintained 15 hospitals and 21 dispensaries which treated 349,577. The church erection fund amounted to \$2,607,976, and appropriations for pastoral support were made to churches in 32 States and 6 Canadian provinces. The Society maintained Bible chairs in four State universities; and forty-five young people's conferences were held, a gain of eleven over the previous year. Work was conducted among the French, Highlanders, immigrants, Negroes, Orientals, Spanish-Americans, and Mexicans. The department of benevolence maintained 6 homes for children, an equal number of homes for the aged, and one hospital. In 1928, 25 colleges coöperated with the Board of Education. The total church membership throughout the world in 1928 was 1,629,383, a gain over 1927 of 56,120, and in the United States and Canada, 1,538,365, a gain of 56,989. Bible school enrollment for the world was 1,204,910, a gain of 6302, and for the United States and Canada, 1,131,586, a gain of 15,067. Contributions for the fiscal year in the United States and Canada totaled \$4,063,937. Among the periodicals published by the communion are *World Call*, *Christian Evangelist*, and *Christian Unity Quarterly*. The president of the International Convention for the year was Harry H. Rogers of Tulsa, Okla. Dr. F. W. Burnham of Indianapolis, Ind., was president of the United Christian Missionary Society.

DISEASES OF ANIMALS. See VETERINARY MEDICINE.

DISEASES OF PLANTS. See BOTANY.

DITRICHSTEIN, LEO. Austro-American actor and playwright, died at Auersperg, Austria, June 28. He was born at Temesvar, Hungary, Jan. 6. 1868. He was educated at Vienna and made his first stage appearance with a light opera company in Hungary. He was trained in German dramatics in Berlin. His American début was made in New York in 1890, in a German play, *Die Ehre*. He soon acquired sufficient English to appear acceptably on the American stage, and he was naturalized as an American citizen in 1897. He played in *Mr. Wilkinson's Widows*, *Trilby*, *Are You a Mason?* *Hedda Gabler*, *Doctor Claudius*, *The Concert*, and other plays that were successful and established him in public favor as a portrayer of comedy and romantic rôles. His greatest hit was made in his own play, *The Great Lover* (1915) written in collaboration with Frederick and Fanny Hatton. Among the other plays written by Ditrichstein were: *Gossip* (with Clyde Fitch, 1895); *A Southern Romance* (1897); *The Last Appeal* (1901); *What's the Matter With Susan?* (1904); *The Ambitious Mrs. Su-*

san (1907); *The Million* (from the French, 1911); *The Concert* (1911); *Temperamental Journey* (1912).

DIVORCE. See MARRIAGE AND DIVORCE.

DIX, JOHN ALDEN. Former Governor of the State of New York, died at New York City, April 9. He was born at Glens Falls, N. Y., Dec. 25, 1860. He was graduated from Cornell University in 1883 and, entering business, became, eventually, president of the Iroquois Paper Company, treasurer of the American Wood Board Company, vice president of the Blandy Paper Company and manager of the Moose River Lumber Company; he was also vice president of the First National Bank of Albany, N. Y. In 1904 he was a delegate to the Democratic national convention, in 1908 Democratic nominee for lieutenant-governor and chairman of the Washington County Democratic Committee, and in 1910 chairman of the Democratic State Committee. He was elected governor for one term, 1910-12. After his retirement from office Mr. Dix took no active part in politics. Hamilton College conferred on him the degree of LL.D. in 1912.

DOMINICA. See LEEWARD ISLANDS.

DOMINICAN REPUBLIC (SANTO DOMINGO). A West Indian state occupying the eastern part of the island of Haiti, or Santo Domingo, the smaller part being occupied by the Republic of Haiti. Capital, Santo Domingo. See HAITI.

AREA AND POPULATION. The estimated area is 19,332 square miles; population, according to the census of 1921, 897,405. The largest cities with their populations at that census were: Santo Domingo, 30,957; Santiago de Los Caballeros, 17,502; San Pedro de Macoris, 13,802; and La Vega, 6564. An American estimate placed the population at 1,022,485 at the beginning of 1928.

PRODUCTION. The Dominican Republic is essentially an agricultural country deriving its income almost entirely from the cultivation of the soil. Although sugar is the major crop, contributing 62 per cent of the total exports in the past five years, the yield from other crops, cacao, tobacco, and coffee, is important in gauging the trend of economic conditions. These secondary crops are raised by numerous small farmers and the money realized from their sale means a direct contribution to purchasing power. Raw sugar production, on the other hand, is largely controlled by outside capital and the money obtained from the crop does not flow directly back into circulation through such wide diffusion of receipts, although individual cane growers do benefit, of course, from that portion of the crop not grown by the centrals, and there is a further direct contribution in the form of wages and transportation costs. This condition explains the apparent inconsistency of a period of unusual prosperity coincident with a depression in the market for the major crop, as was the case in 1927, when sugar prices were close to the cost of production. The prosperity existing in 1927 was primarily the result of large crops of tobacco and cacao with favorable prices. The cacao production in 1927 was 26,000,000 kilos and the tobacco production 35,000,000 pounds. In the same year 652,332,000 pounds of raw sugar kind are found in the Republic but are not exported. Mineral resources of almost every plotted to a large degree of commercial success.

COMMERCE. Raw sugar is the principal commodity exported from the Dominican Republic and in 1927 comprised 53 per cent of the total shipments. The other leading products shipped, in order of their importance, were cacao, leaf tobacco, and coffee. The principal countries of destination for exports from the country are the United States, Canada, Ireland, England, the Netherlands, Germany, and France. The United States is the largest consumer of Dominican products, having taken 28 per cent of the total exports for 1927.

The imports consist mainly of manufactured goods. There is relatively little industry in the country. The principal articles imported, in the order of their importance, are cotton manufactures, rice, jute bags, wheat flour, gasoline, machinery, automobiles, lard, silk goods, crude oils, chemicals and drugs, boots and shoes, paper manufactures, oils for table use, soap, lumber, salt fish, woolen manufactures, rubber manufactures, illuminating oils, and liquors and beverages. The chief source of Dominican imports is the United States, which furnished 64 per cent of the total in 1927, as compared with 60.7 per cent in 1926. Germany was next in importance, with 7.8 per cent in 1927, followed by British India, the Netherlands, France, Belgium, and Spain. As between the Dominican Republic and the United States, the balance of trade is uniformly in favor of the United States. This "favorable" balance has increased noticeably since 1922; as Dominican sugar no longer can compete successfully in the United States against the Cuban and Porto Rican product.

The foreign trade of the Republic for 1927 amounted to \$58,962,000, a figure which has only been exceeded in the history of the Republic in 1919 and 1920, when total trade amounted to \$61,620,000 and \$105,257,000, respectively. Total imports and exports amounted to \$27,784,000 and \$31,178,000 in 1927, as compared with \$23,678,000 and \$24,896,000, respectively in 1926. The trade balance in favor of the Republic amounted to \$3,394,455.

FINANCE. The following table from the Pan-American *Bulletin* shows the budget for 1928:

<i>Receipts</i>	
Internal revenue	\$4,893,000.00
Customs receipts	4,800,000.00
Charity lottery	2,822,400.00
Central Dominican Railway	300,000.00
Santiago-Puerto Plata water and light service	120,000.00
10 per-cent surcharge on patents for chambers of commerce	50,000.00
Tax on imports by tonnage, water-works fund, law No. 419	80,000.00
	<hr/> 12,565,400.00
<i>Expenditures</i>	
Legislative power	293,220.00
Executive power	277,220.00
Department of the Interior, Police, War, and Navy	1,572,694.40
Department of Foreign Affairs	399,645.85
Department of Finance and Commerce	1,027,790.00
Department of Justice and Public Instruction:	
Judicial section	733,557.88
Educational section	1,210,235.04
Department of Agriculture and Immigration	236,210.00
Department of Promotion and Communications	1,732,676.00
Department of Health and Charity ..	122,180.00
Special expenditures	4,517,400.00
	<hr/> 12,172,829.17

As may be seen from the foregoing, there is an estimated surplus of \$392,670.83 for 1928. The actual surplus for 1927 was \$962,080.46. The public debt on Dec. 31, 1927 was \$15,000,000. The gross collections of Dominican Customs Receivership in 1927 amounted to \$5,896,429, the largest for any year excepting 1920, when they reached \$6,273,741.

COMMUNICATIONS. In 1926, 1959 vessels of 2,357,444 tons entered the ports of the Republic and 1585 vessels of 1,959,901 tons cleared. There are two railway lines in the country, one owned by the Government about 60 miles long and a privately owned line about 80 miles long. In 1927 there were 557 miles of highway; in 1926 1034 miles of telegraph wire; in 1924, 2383 telephones in use; and in 1928 there were 3985 automobiles registered.

GOVERNMENT. The Republic is governed under a constitution adopted by the Constituent Assembly on June 13, 1924. Executive power is vested in a president and cabinet of seven ministers. The President is ineligible for a second successive term. The senators and deputies are elected for four years by direct popular vote. Each of the 12 provinces is represented by one senator and (in practice) by two deputies. President in 1928, Horacio Vazquez, who assumed office on July 12, 1924; vice president, Frederico Velazquez.

HISTORY. The Pan American *Bulletin* for September, 1928, reported an interesting commentary on the Columbus Lighthouse. "Architects all over the world have responded with great enthusiasm to the call to the competition for architectural plans for the Columbus Memorial Lighthouse to be erected in Santo Domingo, capital of the Dominican Republic. By the middle of August, 1928, the total number of architects registered in the Pan American Union was 1091, from 58 nations and territorial divisions. The handsome quartos containing the conditions for the competition were mailed to reach the competitors September 1. Beautiful examples of the bookmaker's art, these volumes, prepared by Mr. Albert Kelsey, technical adviser of the competition, contain a history of the project, a map showing the site, the programme of the preliminary competition, rules to govern both stages of the competition, and "Impressions of, and Observations by, an Architect after Having Visited the Dominican Republic."

DONN-BYRNE, BRIAN OSWALD. See BYRNE, DONN.

DONNELLY, DOROTHY AGNES. American actress and playwright, died at New York, January 3. She was born at New York, Jan. 28, 1880, and was educated at the Convent of the Sacred Heart, New York. She made her debut at the Murray Hill Theatre, New York, playing juvenile and leading rôles, and her first success was in the creation of the part of Candida in the George Bernard Shaw play of that name, in December, 1903. She also played Mme. Alvarez in Richard Harding Davis's *Soldiers of Fortune*. In 1905 she appeared in several of Ibsen's plays, and later took the part of Jacqueline in *Madame X*. Her last stage appearance was made in 1915; after that time she devoted herself to the writing of plays, in which she was successful. She was prominent in war work, especially overseas, as a member of the A. E. F. Entertainers. She wrote: *Blossom Time*, *Forbidden*, *Poppy*, and *The Student Prince*,

and was co-author of *Florabelle, Fancy Free, Johnny Get Your Gun*, and *The Riddle Woman*.

DOULCET, JEAN. French diplomat, died at Rome, February 12. He was born at Palaiseau, France, Aug. 5, 1865. He was educated at the Lycée Condorcet and was admitted to the bar. He studied also at the School for Political Sciences. M. Doulcet's first diplomatic post was that of Secretary of the French Embassy at London, from 1893 to 1897, and he served in the same capacity at Lisbon, 1907, and Madrid, 1911. From 1912 to 1918 he held the rank of minister plenipotentiary, and was attached to the French Embassy at St. Petersburg, his term of service there covering the period of the World War. He was minister to Norway in 1919, and he was in charge (1920-21) of the mission which reestablished diplomatic relations between France and the Holy See. Following the return of that mission he became minister to Hungary, in 1921. At the time of his death he was French Ambassador to the Holy See.

DOURINE ERADICATION. See VETERINARY MEDICINE.

DRAINAGE. See RECLAMATION.

DRAKE UNIVERSITY. An institution for the higher education of men and women at Des Moines, Iowa, founded in 1881. The number enrolled in the autumn of 1928 was 1735, distributed as follows: College of liberal arts, 607; commerce, 267; education, 326; law, 77; fine arts, 358; and Bible, 93. The faculty numbered 90. The fixed endowment amounted to \$1,266,770. The number of volumes in the library was 51,024. President, Daniel W. Morehouse, Ph.D.

DRAMA. See THEATRE and articles on LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE; ETC.

DUKE UNIVERSITY. A coeducational institution for higher education at Durham, N. C.; established in 1924 by the expansion of Trinity College, made possible through benefactions from James B. Duke, as described in the article on the University in the 1925 YEAR BOOK. The enrollment for the autumn of 1928 was 1806, distributed as follows: Undergraduates, 1576; in graduate school of religion, 62; students in other graduate schools, 168. For the summer session of 1928 there was an enrollment of 1484. In the autumn of 1928 the faculty, including officers, numbered 235, and in addition, there were 39 teachers in the 1928 summer school who were not included on the regular staff of Duke University. The endowment funds of the University amounted to \$20,785,207, and the income for the year was \$864,723. Eleven new buildings, including a library, union hall for recreational and student activities, a chapel, five dormitories, a class-room building, a science building, and a faculty apartment house were occupied during the year; and work was progressing satisfactorily on a forty-five-hundred-acre tract of land, a mile from the campus, on which were to be located a group of forty or more buildings, built of native North Carolina stone of Cambrian formation, taken from a quarry owned by Duke University. The Duke University Medical School was to be the first university unit to occupy the new campus, in about September, 1930, followed as rapidly as possible by other units. Gifts received during the year 1927-28 amounted to \$15,290, and it was reported that the Angier B. Duke Memorial

Loan Fund for students exceeded \$500,000 in value in 1928. The University library contained 108,865 catalogued volumes. President, William Preston Few, Ph.D., LL.D.

DUNCAN, dŭn'kăn, JAMES. American labor leader and former vice president of the American Federation of Labor, died at Quincy, Mass., September 14. He was born in Kincardine County, Scotland, May 5, 1857, and educated at Aberdeen. Moving to the United States, he began work as a granite cutter in 1873, and he became secretary of the New York branch of the Granite Cutters' International Association in 1881, holding a corresponding position at the Baltimore branch three years later. In 1895 he became president of the association, after having been elected vice president of the American Federation of Labor in the previous year. He became first vice president in 1902, and in 1895 he was made editor of the *Granite Cutters' Journal*. In 1900 he led a successful strike for an eight-hour day in this industry. He represented the American Labor movement at the British Trades Congress at Bristol in 1898, and he was also a delegate of the American Federation of Labor at the International Secretariat Conference of Labor at Budapest in 1911. President Wilson appointed Mr. Duncan diplomatic envoy extraordinary to Russia in 1917, and he became a member of the American Labor Mission at the Paris Peace Conference in 1919.

DUNKERS or DUNKARDS. See BRETHREN, CHURCH OF THE.

DURANT PRIZE. See PROHIBITION.

DUTCH EAST INDIES. A possession of the Netherlands in the East Indies, comprising the territory of Dutch East India and consisting of the group of islands in the Pacific lying between 6° N and 11° S, and between 95° and 141° E longitude. Capital, Batavia.

AREA AND POPULATION. The usual method of dividing the colony is as follows: (1) Java and Madura, divided into 17 residencies, each under a resident and several assistants at the head of a large number of native officials; (2) the Outposts, consisting of Sumatra, Borneo, Celebes, a part of New Guinea, the Molucca Archipelago, the Sunda Islands and other small islands, under functionaries variously entitled governor, resident, controller, etc. The area is estimated at 733,642 square miles; population, according to the census of 1920, 49,350,834. In the same year the Europeans numbered 169,708, and the Orientals, other than native, 876,506, mostly Chinese and Arabs. The estimated population on Dec. 31, 1925 was 51,013,878.

PRODUCTION. Most of the land of the Dutch East Indies is claimed by the Government and a vast majority of the people are agricultural laborers. The harvested areas under various native crops in Java and Madura in 1926 were as follows, in acres: Irrigated rice, 7,287,448; non-irrigated rice, 1,102,853; maize, 4,347,355; cassava, 1,879,992; sweet potatoes, 420,244; groundnuts, 484,197; soya beans, 420,984; other pulses, 522,869; tobacco (native), 346,640; other secondary crops, 1,461,151; total, 18,573,733. The harvested area under sugar in the same year was 444,019 acres; the production, 1,972,771 tons; and the number of sugar factories, 178. The amounts of other products were: Coffee, 38,978 tons; rubber, 122,926,000 kilos; cinchona, 10,643,000 kilos; tobacco, 59,059,000 kilos; tea, 62,920,000 kilos; cacao, 775,000 kilos; and oil

palms, 9,507,000 kilos. The total yield of the tin mines, both those worked by the Government and by private capital in 1926 was 528,566 piculs (1 picul equals 133½ pounds). In the same year the yield of the principal coal mines in Java, Sumatra, and Borneo was 1,466,359 metric tons. While the greater part of the land of Java is claimed by the Government, private estates are found chiefly in the western part, and mainly in the hands of Europeans and Chinese.

COMMERCE. Foreign trade of the Dutch East Indies registered an increase of 18 per cent in imports and a decline of 10 per cent in exports. Merchandise imported for private account was valued at 865,304,000 florins (\$346,122,000), against 818,370,000 florins (\$327,348,000) the previous year, and exports for private account totaled 1,594,464,000 florins (\$637,785,000), as compared with 1,784,790,000 florins (\$713,916,000) in 1925. The substantial advance in the value of import trade was due primarily to larger purchases of cotton goods, machinery, and automobiles. Imports of automobiles, parts, and accessories increased 40 per cent in value. Lower rubber prices and decreased sugar output were mainly responsible for the decline in export trade.

The values of the leading import and export commodities in 1926, as compared with 1925, were as follows:

**CHIEF COMMODITIES
IN NETHERLANDS EAST INDIAN TRADE**

Item	1925 Thousand florins *	1926 Thousand florins *
Imports:		
Cotton goods and yarn	219,212	225,990
Provisions and beverages . . .	102,530	95,290
Rice	74,860	96,082
Iron and steel	52,560	59,700
Machinery and tools	44,477	62,130
Cigars, cigarettes, and tobacco	40,767	35,090
Wearing apparel	19,245	18,540
Artificial fertilizers	18,070	19,350
Glass, porcelain, and earthenware	16,364	15,530
Automobiles, parts, and accessories	18,433	26,360
All other	211,852	211,242
Total	818,370	865,304
Exports:		
Rubber and gutta-percha . . .	586,540	484,900
Sugar, all grades	367,290	269,640
Petroleum and products	152,530	203,200
Tobacco	110,470	96,980
Copra	102,390	83,270
Tin and tin ore	77,860	82,460
Tea	74,370	72,930
Coffee	68,230	70,280
All other	245,110	230,754
Total	1,784,790	1,594,464
Merchandise export balance	966,420	729,160

* The florin has a par value of \$0.402. It averaged \$0.4016 in 1925 and \$0.4009 in 1926. Conversions in the text are made at \$0.40.

Nearly 60 per cent of the import trade in 1926 was with the Netherlands, Great Britain, Japan, Germany, and the United States. While imports from the Netherlands increased in value, the share of the mother country in the total import trade remained at 18 per cent. Imports from Great Britain and Japan declined in both value and percentage, while imports from Germany and the United States advanced in both value and percentage. The Netherlands, the

United States, Great Britain, and British India were the countries of destination of 50 per cent of the total export trade in direct shipments in 1926.

FINANCE. Despite the intention of the Government of the Netherlands' East Indies to maintain a balanced budget in the future, the estimates for 1929, as finally submitted to the Volksraad (legislative assembly) for consideration on May 15, 1928, indicated a probable deficit of over 52,000,000 florins. As in previous years, however, the deficit, if it should finally result, will be incurred on the extraordinary services rather than on the ordinary transactions. The latter were budgeted for a surplus—a matter of much gratification to the Government, which for years had striven at all costs to balance at least the ordinary budget. Under ordinary economic conditions an estimated deficit may cause no anxiety; in many past years estimated deficits have been considerably reduced or turned into a surplus. Thus, although the estimates for both 1926 and 1927, as finally approved by the legislature, anticipated heavy deficits, the final accounts for those years showed surpluses—over 47,000,000 florins for 1926 and nearly 13,000,000 for 1927. Such favorable results were made possible by the high prices of tin and rubber, the production and sale of which are controlled by the Government.

In any analysis of the budget of the Dutch East Indies the importance of the price of tin and rubber in the world market must be kept in view. If the world prices of these staples is high the Government realizes large revenues, as was the case in 1926 and 1927; conversely if the price falls, revenues shrink and the budget estimates would be affected accordingly. It was quite unlikely, however, that the anticipated results for 1929 would show any improvement. The early forecast for a surplus for the fiscal year 1928 was shadowed by a decline in the price of tin and also by a sharp fall in the price of rubber. The deficit was expected to reach 57,000,000 florins. As the prospects for a rise in the price of tin and rubber in 1929 were expected to be poor, according to the Government's report, there was less likelihood of the fiscal results proving more favorable than they were estimated, unless, of course, certain public-works construction be deferred.

The public debt on Dec. 31, 1927, was 1,056,000,000 florins (\$422,000,000).

COMMUNICATIONS. In 1926, 11,506 steamers of 8,694,206 tons, and 8940 sailing vessels of 526,899 tons entered the ports of the Dutch East Indies. At the end of 1926, the total length of rail and tramways (state and private) was about 3870 miles (2930 in Java, 915 in Sumatra, and 25 in Celebes); the gross receipts about 118,176,000 florins; working expenses, 70,876,000 florins; number of passengers carried, 136,093,000.

GOVERNMENT. The territory is under the sovereignty of the Netherlands (see NETHERLANDS, THE), but is partly under direct government and partly under subject native officials. In 1917 and again in 1925 the mother country granted certain measures of home rule. The chief executive authority is the governor-general who is aided by a council of five members which acts partly as a legislative and partly as an advisory body. The Volksraad is a legislative

assembly including representatives of the natives, Europeans, and foreign Orientals, and has comparatively little power in internal affairs. The governor-general and the council are nominated by the crown. Governor-General in 1928, Dr. A. C. D. de Graeff, appointed Mar. 26, 1926.

DUTCH GUIANA, gē-ā'nā, or **SURINAM**. A possession of the Netherlands on the north coast of South America lying between French Guiana on the east and British Guiana on the west, bounded on the south by inaccessible territory reaching to the Tumuc-Humac Mountains. Area, 54,291 square miles: population, Dec. 31, 1926, 142,896, including Negroes and Indians. Capital, Paramaribo, with 45,703 inhabitants. The movement of population in 1926 was: Births, 3922; deaths, 2223; marriages, 365. Among the chief products are sugar, cacao, bananas, coffee, rice, maize, rum, and molasses. Gold production in 1926 was 253,608 grams, and that of balata, 563,000 kilos. The executive authority rests with a governor and an assisting council, both nominated by the Crown. Governor in 1928, Baron van Heemstra, appointed on May 23, 1921.

DUTCH REFORMED CHURCH. See **REFORMED CHURCH OF AMERICA**.

DUTCH WEST INDIES. The name applied to the Dutch possessions in the West Indies, viz., Dutch Guiana and Curacao. Consult those titles.

DWIGHT, JOHN WILBUR, American politician and former representative in Congress from the Thirtieth New York District, died at New York, January 19. He was born at Dryden, N. Y., May 24, 1859, and was educated at New Haven, Conn. He was elected as a Republican to the Fifty-seventh Congress and was reelected five times. He served as Republican "whip" of the House of Representatives. Mr. Dwight retired from political life in 1913 to devote his time to his duties as president of the Blue Ridge Railway.

DYE STUFFS. See **CHEMISTRY, INDUSTRIAL**.

DYNAMO-ELECTRIC MACHINERY. The manufacturers of electrical machinery in the United States reported that during the year 1928 the production had been greater in the aggregate than in any preceding year, and that in spite of the fact that prices had been reduced there had been many improvements resulting in higher efficiency, greater convenience, and greater reliability. The engineer had been active in devising new methods and new materials which had progressively reduced the size and weight of machines of a given capacity and also lessened the amount of labor required in their manufacture.

Of particular interest in the new method of construction was the rapid growth of the use of electric welding in the construction of dynamo-electric machines giving the so-called "fabricated steel" structure which was gradually eliminating the use of castings and reducing the amount of metal required. This was used in all sizes from the smallest motors to the largest turbo generators.

In the record of size of designs completed and placed in service were the 75,000-kw. single-cylinder turbo-generator unit operating at 1500 r.p.m. in Buffalo, a tandem unit of 94,000 kw. at 1500 r.p.m. for 16,500 volts for Long Beach, Calif., and a 188,000-k.v.a., 1800 r.p.m. cross-compound for the N. Y. Edison Co.

In the category of "in course of construction" there was the 160,000-kw., 1500 r.p.m. tandem-

compound for the Fourteenth Street Station of the N. Y. Edison Co. This machine consists of three turbines all on one shaft driving the one 160,000-kw. generator. An interesting novelty in this generator is that its armature has two electrically independent three-phase windings, each good for 80,000 kw. These windings lie in different slots and will be connected to separate sections of the main bus bars, thus tying the sections of the bus bars together like a reactor and reducing and localizing the dangerous effects of short circuits, yet permitting parallel operation of all machines. The largest combined unit so far under construction was the 208,000-k.v.a., 1800-r.p.m., 22,000-volt unit for State Line, Ill. It is a triple-compound turbine driving three generators. This was being constructed by the General Electric Co. It should be noticed that the voltage, 22,000, was also an advance over any previous values which were successively 13,800 and 16,500. Several other machines less noteworthy in other respects, were being built for 22,000 volts. See **POWER PLANTS STEAM; STEAM TURBINES**.

In the Hell Gate Station of the N. Y. Edison Co., there was being installed a 160,000-kw. turbo-generator designed by Brown Boveri and constructed partly at their factory in Switzerland and partly in the Hell Gate Station.

There had been an increase in the capacity of machines of very high speed, with a new record for 1928 in the United States of 12,500-kw. machines operating at 3600 r.p.m. In Europe they were building 40,000-k.v.a. machines operating at 3000 r.p.m., this speed being due to the popularity of the 50-cycle current in Europe.

The Conowingo Power Plant on the Susquehanna River was still under construction and the electrical units, of which seven were on order for the initial installation, are of 40,000-k.v.a. or 36,000 kilowatts, having 88 poles and operating at 82 r.p.m. These units, because of their low speed, were the largest in bulk and dimensions of any units so far built. Some were being constructed by the Westinghouse Co. and some by the General Electric Co.

The ultimate development contemplated 350,000 h.p., which would make it second to the development of the Niagara Falls Power Company of 452,000 h.p. and greater than the Muscle Shoals development of 260,000 h.p.

The closed ventilating system for large generators had increased in utilization and bade fair to become standard. Most of the existing installations used air, circulated through the machines and cooled by water coils; but on one installation, that of a synchronous motor in Pawtucket, hydrogen was used for cooling and it was claimed that the rating of this motor, which is 10,000 k.v.a. with air cooling, was increased to 12,500 k.v.a. This machine was totally enclosed in an explosion-proof case and was placed outdoors, which also was a novelty.

The size of synchronous converters had been pushed up a notch to a capacity of 4200 kw. in one unit. Of special interest also was the construction of some 200-h.p. d.c. motors to operate at 5000 r.p.m. driving centrifugal pumps. The synchronous converter was meeting serious competition in the mercury-vapor rectifier, which was being installed for the conversion of alternating to direct current for all sorts of work. It was reported that there were in the United States 77,000 kilowatts of these converters in service supplying direct current voltages from 250 up to

3000; some manually operated and controlled and others automatically operated, as a system of automatic operation had been extended to this type of apparatus.

The application of electrical machinery to marine work has made several noteworthy advances in the year 1928. Most important were the final tests on the U. S. airplane carriers, *Lewington* and *Saratoga*. The former made a trip of 2228 nautical miles from San Pedro to Honolulu in 72 hours and 34 minutes, which gives a sustained average speed of 30.7 knots. In a later test this same vessel made a speed of 34.82 knots. In December the *Saratoga*, a sister ship, made a speed of 34.99 knots in a test during which 213,000 horse power was developed by its steam-electric machinery, thus acquiring the title of the world's fastest ship.

For the mercantile service, the steamship, *Virginia*, was placed in service between New York and San Francisco. This is a steam-electric propelled vessel slightly larger than its sister ship, the *California*, which was placed in service in 1927. These vessels are of about 30,000 tons, develop 17,000 h.p. and a speed of from 17 to 18 knots with twin screws. The first British ship to be propelled by a steam-electric equipment was under construction and the propelling machinery had been ordered from an American manufacturing company. The vessel was to ply between England and Australia. It is of 19,000 tons and was designed to have a speed of 19 knots.

Many minor developments have occurred in the line of Diesel-electric ship propulsion. The U. S. Shipping Board revamped one of its older ships which had a 3000-h.p. geared turbine and single screw by equipping it with four 880-kw. Diesel-engine-driven generators and one 4000-h.p. double motor operating at 60 r.p.m. with 1500 volts direct current giving a speed of 13 knots. All the deck auxiliaries are also electrically driven. The Diesel type of propelling machinery gives a much greater range of action without refuelling. It is also possible, where required, to control the propelling machinery from the bridge or pilot-house, as is done in some vessels for harbor and river navigation and in tug-boats. There were in 1928 in operation numerous ferry-boats with Diesel-electric propulsion and one of 4500 h.p. had been ordered for Messina, Italy.

Automatic control of hydro-electric stations had been extended to still greater capacities in the Shipping Point Station on the Ohio River. Here a plant of 100,000 k.v.a. capacity, consisting of eight generators of 12,500 k.v.a. each at 14,000 volts, are started and synchronized automatically and so protected that one man operates the whole station. The economic reason for the arrangement is that the plant is only used part time because of the variable flow of water and lack of storage facilities.

Another development in remote control is the reading of electric meters over telephone or other two-wire electric circuits. Several instruments in a distant station without operator may be read over one pair of wires and recorded either visually or graphically at the load dispatcher's headquarters or another power station. In some cases, a carrier-current channel may be used to accomplish the result. The method consists of automatically sending a series or set of impulses from the meter to be read to an ingenious device which records a figure proportional to the number of impulses in the set.

EADIE, DENNIS. British actor-manager, died at London, June 10. He was born at Glasgow, Jan. 14, 1875, and began his theatrical career in 1899, as a member of a touring company. He made his first London appearance in 1900, and thereafter, until his death, was one of the most versatile and popular players of England. He played leading rôles, principally in comedy, but his repertory included parts in melodrama, "cloak-and-sword" plays, musical comedy, and motion pictures. In twenty-nine years he played more than eighty parts. Among the plays in which he acted were *The Prisoner of Zenda*, *Rupert of Hentzau*, *Milestones*, *Man and Superman*, *Arsène Lupin*, *My Lady's Dress*, and *The Man Who Stayed Home*. Mr. Eadie was also manager of the Royalty Theatre.

EARTH, STUDY OF. See GEOLOGY; ASTRONOMY.

EARTHQUAKES. It is estimated that an earthquake is felt in some part of the world on an average of at least 4000 times annually; in the United States alone, two hundred or more are usually reported each year. Fortunately, the vast majority are feeble and harmless, or else occur under the sea or in thinly populated districts. The year 1928 had the usual quota of quakes, many of which caused considerable local damage and loss of life, with a few ranking as severe disasters.

A series of intense quakes, the most violent ever felt in the region, occurred in southern Bulgaria during the latter half of April. The epicentre migrated westerly during the series, along a line parallel to the Balkan ranges; and the great area of the damaged regions indicated a deep-seated focus. Over 100 lives were lost, 700 injured, many thousands rendered homeless, and nearly 20 million dollars' damage caused.

Corinth, Greece, was shaken by a series of quakes beginning April 22. The focus was shallow, and the damaged areas small. The region of Greece is the most seismically active in the world, exceeding even Japan in this respect.

Southern Chile was rocked on December 1 by a quake which killed over 200, and resulted in great property destruction, especially in Talca and Chillan. Considerable destruction was caused by severe quakes which shook the Mexican province of Oaxaca and neighboring regions on March 22, April 13 and 17, June 16, and October 8. Three villages were destroyed in Kaledijk, Turkey, October 4. Mucasani, Peru, was destroyed April 9. Nehandan, Persia, was wiped out March 10. Quakes in Smyrna, Turkey, on March 31 and April 24 resulted in the deaths of 50 people, and caused heavy damage. Several severe quakes took place during the year near Seward, Alaska, but no damage was caused. Semi-destructive quakes occurred in northeastern Italy, near Udine, on March 26 and 27. See SEISMOLOGY; GEOLOGY.

EAST AFRICA PROTECTORATE. See KENYA COLONY.

EASTMAN, CRYSTAL. See FULLER, CRYSTAL EASTMAN.

ECLIPSES. See ASTRONOMY.

ECONOMIC ASSOCIATION, AMERICAN. An organization founded in 1885 at Saratoga, N. Y., to encourage economic research, to issue publications on economic subjects, and to encourage complete freedom of economic discussion. The membership, which in 1928 totaled 3507, comprises persons interested in the study of political economy or the economic phases of political and social questions, and includes college professors, lawyers, business men, and politicians, with pro-

ssional economists in the minority. During the first twenty-five years of its existence the association published mainly monographs on social economic topics, dealing largely with current problems, which make up twenty-eight volumes, and furnish the best existing guide to the progress of economic thought in the United States. In 1911, *The American Economic Review*, quarterly, first made its appearance. *The Review* aims to publish material showing the progress of economic thought, along such lines

"Economic Theory," "Money, Banking, and Credit," "Accounting," "Taxation and Finance," "Agriculture," "Market Distribution," "Foreign Commerce," "Economic History," "Labor Problems and Standards of Living," etc. The Association, which meets annually, convened in 1928, at the Stevens Hotel, Chicago, Ill., December 26-29. The officers for 1928 were: President, Fred M. Taylor, University of Michigan; vice presidents, Frank L. McVey, University of Kentucky and Jessica B. Peixotta, University of California; executive committee, Richard T. y, Northwestern University, Clyde, O. Ruggles, Ohio State University, Fred R. Fairchild, Yale University, George W. Dowrie, Stanford University, William H. Kiekhofer, University of Wisconsin, and Edmund E. Day, University of Michigan; secretary and treasurer, Frederick S. Sibley, Northwestern University, Evanston, Ill.

ECONOMIC ENTOMOLOGY. See ENTOMOLOGY, ECONOMIC.

ECONOMICS. See BANKS AND BANKING, BUSINESS REVIEW; FINANCIAL REVIEW; PUBLIC FINANCE; STATISTICS; TAXATIONS; ETC.

ECONOMIZERS. See BOILERS.

ECUADOR, ɛk'wá-dôr. A South American republic on the northwest coast of the continent between Colombia on the north and Peru on the south. Capital, Quito.

AREA AND POPULATION. The area in 1928 was still undetermined because of the boundary dispute with Peru, but was variously estimated by different authorities at from 116,000 to 276,000 square miles. The population was estimated approximately 2,000,000, about three-quarters of whom were Indians and the remainder of mixed blood. The last official census in 1903 placed the population at 1,328,821. The chief towns with their populations are: Quito, 80,000; Guayaquil, 100,000; Cuenca, 30,000; Riobamba, 12,000; and Ambato, Loja, and Latacunga, each with about 10,000 inhabitants.

EDUCATION. Elementary instruction is free and compulsory. Institutions of higher learning include the Central University at Quito, the Guayas University in Guayaquil, and the Azuay University in Cuenca. There is also a law college at Loja.

PRODUCTION. Ecuador is primarily an agricultural country, and it is from this source that the bulk of its income is derived. The principal agricultural products are cacao, ivory nuts, sugar, coffee, and cotton, but a variety of others such as corn, rice, beans, lentils, and fruits are grown and a portion of the production exported. Rubber, cinchona bark, kapok, and broom, macorina, and toquilla straw are also important vegetable products appearing in the exports. Cacao is the leading crop, and while Ecuador is not dependent on one crop to the same extent as certain other Latin-American countries, nevertheless, cacao is a major factor in determining the trend of business conditions. The country is one of the chief

producers of cacao, ranking after British West Africa and Brazil. Until 1905 Ecuador was the largest producer of cacao in the world, but the expansion of production in British West Africa and Brazil forced Ecuador into third place; for while the 1926 production in the last named country was considerably below that of 20 years ago, world production in the same period more than doubled. In fact, with the ravages of the witch-broom and the Monilia diseases, Ecuador is becoming less and less a factor in the world cacao market. The production in 1926 was 430,976 quintals as compared with 692,700 quintals in 1925.

Ecuador has practically monopolized the production of Panama hats which are produced at the rate of 700 dozen per month. The mineral resources include gold, silver, petroleum, copper, iron, lead, coal, and sulphur, but mining is almost exclusively confined to gold, of which practically the entire output is exported to the United States.

FINANCE. As originally passed the ordinary budget of Ecuador balanced at 51,888,000 sucres and the extraordinary budget balanced at 12,327,450 sucres. By a decree of June 13, 1928, various amendments were made to the budget for 1928 as originally passed. As a result of these amendments, the ordinary budget balanced at 55,393,069 sucres. Of the increase, the sum of 2,269,100 sucres was added to the appropriation for the service of the public debt, the remainder being divided among several other items. During the course of his address on the occasion of opening the Mortgage Bank of Ecuador on Mar. 4, 1928, Dr. Ayora, Provisional President of the Republic, stated that the internal debt of the Republic, which on Dec. 31, 1925, amounted to 49,355,427 sucres, was reduced to 17,018,666 sucres by June 30, 1928.

The *Registro Oficial* for Jan. 2, 1928, contained a new income tax law, suggested by the Kemmerer Commission (see preceding YEAR BOOKS) to replace the former law on that subject. The law establishes a tax of 8 per cent on all income derived from investments, with the exception of the profits of individuals derived solely from agriculture, certain interest collected and paid by banks, the interest of cooperative societies, and interest on investments of public institutions. Flat payments were required on graduated incomes and additional percentages charged on the balance after the flat deductions had been made. The following exemptions were allowed: An unmarried person, 2000 sucres; the head of a family, 3000 sucres; each dependent under 18, or over 18 if physically or mentally unable to support himself, 500 sucres; and amounts deducted for pension funds from the salaries of public employees.

COMMUNICATIONS. Guayaquil is visited by the steamships of nine European lines by way of Magellan Straits, as well as by vessels plying only on the Pacific. There are about 500 miles of railway. The 1928 budget contained appropriations of 4,119,500 sucres for the promotion of communications, of which 700,000 were to be spent on railway construction from Puerto Bolívar to Laja, 910,000 from Quito to Esmeraldas, and 1,000,000 from Sibambe to Cuenca. An executive decree of Feb. 13, 1928, terminated the contract between the Government and a foreign company for the construction of the Quito-Esmeraldas Railway, at the same time authorizing the

Bureau of Public Works to receive the section under construction from Quito to Ibarra and to continue work on the railroad.

GOVERNMENT. Nominally, under the constitution, executive power is vested in a president elected for four years, who acts through a cabinet of five ministers; and legislative power in a congress of two houses, a senate of 32 members and a chamber of deputies of 48 members. For the existing government consult the *YEAR BOOK* for 1926. Provisional President in 1928, Dr. Isidro Ayora.

HISTORY. Ecuador passed through a quiet and prosperous year under the benevolent dictatorship of Dr. Isidro Ayora. He stated from time to time that he was willing to step down from his position as dictator as soon as the conditions warranted. He felt, however, that the time was not ripe as yet. In many circles it was firmly believed that if constitutional elections were held he would be returned as chief magistrate of the nation. In accordance with his oft-repeated statements, he announced in the early summer that elections for a National Assembly to consist of 54 members would be held in the last week of August. The elections were held and were conducted with comparative quietude. As was expected, he was elected to the position of President by an almost unanimous vote, declaring that he would hold office only until a new constitution was drawn up and promulgated. On November 19, Don Gonzalo Zaldumbide presented his credentials at Washington as the officially accredited representative of Ecuador in the United States.

EDUCATION IN THE UNITED STATES.

STATISTICS. The U. S. Bureau of Education in 1928 published a statistical survey for the school year 1925-26. The enrollment in the kindergarten and the elementary school was 23,127,102. The total enrollment of secondary students was 4,132,125. The enrollment in the elementary schools had increased 63 per cent in the 36 years since 1890. The general population, however, increased 87 per cent, while the school population, those of ages 5 to 17 inclusive, increased 62 per cent. It appeared, therefore, that the enrollment in public schools had kept pace with the school population, but the school population had not increased as rapidly as the general population.

The enrollment in secondary schools since 1890 exhibited an increase of 1.055 per cent. In 1890 only 1.6 per cent of the school enrollment was in high schools. In 1926, 15.2 per cent of the total enrollment was in the high school.

The total cost of the public elementary schools including kindergartens was \$1,328,396,455. The public high schools cost \$697,911,735. The cost per pupil in the elementary schools, therefore, was \$63.31, and the cost per pupil in the high school was \$185.74. The value of public, elementary, and secondary school property was \$4,676,703,539.

There was no certainty regarding the number of school buildings because there were no data concerning private elementary schools. The States reported 256,104 school buildings. Of this number 16,291 were consolidated schools and there were no less than 16,531 one-room school buildings.

There were approximately 21,700 public high schools and 2,500 private high schools. The public elementary schools employed 644,631 teachers. The public high schools employed 169,538 teachers. The smallest number of men teachers

was listed in 1920 when there were 63,024 men teaching in the elementary schools and 32,386 teaching in public high schools. In 1926 there were 75,436 men teaching in public elementary schools and 63,374 teaching in public high schools.

ADULT EDUCATION. The movement to provide for the education of adults has progressed steadily during the year, 1928. There were no noteworthy changes in the policies that were established earlier, but the offering had become better organized and apparently more persons were making use of the courses offered. (See *ADULT EDUCATION, AMERICAN ASSOCIATION FOR.*) The U. S. Bureau of Education had collected information from various institutions regarding their facilities for helping in adult education. The results were published in *Bulletin No. 3*, 1928. Among the more important offerings were the following:

Correspondence study courses. Practically any subject desired by a student may be taken through a correspondence course conducted by some institutions in the country. The student is expected to write all of the lessons and send them to the instructor. He in turn corrects the papers and returns them with his criticism. Anyone who may be interested in correspondence courses should write his State university.

Class Work Outside of Institutions. It was claimed that in every State of the Union there are institutions of higher learning that give class work outside of their walls. An instructor from the institution concerned meets the classes and conducts the work in much the same manner as is employed within the institution. In most cases the institutions are compelled to require a certain minimum enrollment in order to justify them in providing the instructor. In some cases this minimum is as low as ten persons. Any individual desiring information regarding the possibility of extension work in his own community should make inquiry from his public-school department.

Public Lectures and Lyceums. It was reported by 195 colleges and universities that they rendered service for women's clubs, teachers' institutions, commencement exercises, and so on by providing lecturers either from their own faculties or from other sources. Many of them also furnished music and slides and films to illustrate lectures that may be used by local talent.

Visual Instruction. It was reported by 52 colleges and universities that they furnished visual aids for instructional and entertainment purposes. Some of these institutions offered short courses to teachers and club leaders on how to make use of visual aids that they supplied.

Home Reading Courses. It was reported by 37 institutions that they provide home reading courses. The U. S. Bureau of Education provided no less than 31 such courses. The American Library Association supplies a series entitled *Reading With A Purpose*. There are short reviews of the books to be read. In addition to the courses supplied by the U. S. Bureau of Education and the American Library Association courses were prepared by the institutions themselves.

Publications Educational in Nature. All State universities, land-grant colleges, and some other institutions distribute publications educational in nature. In addition the Federal Government issues many leaflets, bulletins, and other publications for general distribution. Anyone in-

erected in such publications should communicate with their State university or with the Superintendent of Documents, Government Printing Office, Washington, D. C.

Public Information and Package Library Service. Information service for the public was rendered by 59 colleges and universities. This offering took the form of library service in which the use of the institution's library is made available to all who request it or package libraries which are made up largely of magazine clippings selected from current issues of pamphlets and reports. Some of the institutions collect and send packages on more than one thousand subjects. To supplement the assistance offered by library and package-library service some of the institutions through extension divisions prepare and supply bibliography and study outlines. The University of North Carolina furnished such assistance to no less than seven hundred clubs during one year.

Community Drama. There were 54 colleges and universities assisting local communities in interpreting through pageants, folk plays, and dramas the spirit and the history of the State. The University of Indiana has a collection of more than one thousand plays that are suitable for schools, churches, and clubs.

Institutes, Conferences, and Short Courses. There were 141 institutions equipped to aid local communities by holding institutes, conferences, or short courses. The conferences and institutes deal with local or State problems. The courses deal with a great variety of subjects such as various phases of farming and home problems. There is an increasing demand for short courses for business men and technical workers in such subjects as salesmanship, applied psychology, highway engineering, and banking.

Parent-Teacher Association or Other Club Service. There were 64 institutions equipped to promote parent-teacher associations or other club service by assisting in the formulation of programmes, distributing literature, and in some cases by helping in the preparation of monthly bulletins. The parent-teacher movement had developed to such an extent that a number of colleges provided courses on the principles, practices, and policies of parent-teacher associations.

Radio. There was an increasing number of courses offered by radio. Radio was used by 65 institutions either in giving lectures or in conducting other extension work. At present there is no way of determining how many people are assisted by such courses, but 5000 people enrolled for courses given by radio by the division of university extension of the Massachusetts State Department of Education.

INTELLIGENCE TESTING. Since the World War American public schools have given much attention to testing the intelligence of pupils. While this plan is not universal, it is true that a great number of pupils in the United States have been tested. In recent years there has been a marked tendency toward grouping children on the basis of their abilities. The child's standing in the intelligence test has been one basis for such grouping. In the language of the school, there have been X, Y, and Z groups. Usually the X group represented those of superior ability and attainments; the Y group, those who are normal; and the Z, those who are in-

ferior. This method of grouping children has developed as a logical procedure rather than as the outcome of definite research. It has brought in its wake many protests and a large amount of dissatisfaction. Those who have favored the plan have undertaken to answer the objections that have been raised, and they have made a very plausible case for intelligence testing.

In the ten years since the War there had developed three well-defined positions in regard to intelligence testing, especially as applied to public-school children. Those who have been instrumental in developing the intelligence tests have in general assumed a very decided validity for the tests. They have asserted in effect that intelligence is an inherited quality and that it does not change. There have been schools in which children have had their intelligence tested in the first grades, and this has been taken as a measure of their intelligence throughout the elementary school period. Those who employed this procedure have made the assumption that intelligence can be measured, and is measured by tests that are now in existence.

Directly opposed to the view just mentioned has been a conception that intelligence cannot be measured by any of the devices that are in existence at the present time. Those who advocate this view insist that even though it were possible to measure intelligence it would be a most dangerous procedure, for it would inevitably lead into an aristocracy on the one side and to unlimited discouragement and distress among those who made poor showings in the test. They, therefore, condemn unqualifiedly any attempt to make use of any intelligence testing in the public schools.

There is a third group who have insisted that the intelligence tests as developed tend to measure environmental influences quite as much as they measure inherited capacities. This group would not condemn the use of the tests, but they do condemn the interpretations that have been placed upon the results.

During the year 1928 the results of different investigations were brought to bear upon the settlement of the controversies. The National Society for the Study of Education appointed a committee of outstanding psychologists who brought together in a year book the significant investigations. The year book which appeared in February is entitled *Nature and Nurture, Their Influence Upon Intelligence*. Briefly stated, the results of investigations and experiments seem to show that the child's intelligence as measured by tests is affected by environment.

It was too early to determine the effect that these investigations have had upon the practice in the schools, but it was true that nothing in recent times was more discussed in educational circles than the findings of these investigations.

SPECIAL SCHOOLS. *Schools and Classes for the Blind.* For the school year 1926-27, a total of 80 schools reported to the U. S. Bureau of Education. In these institutions there was an enrollment of 6084 pupils. During the year 177 were graduated from the high-school departments. The total receipts of the schools were \$4,028,145, and the expenditures were \$3,993,404. The total value of the buildings and grounds was \$17,283,141. The value of apparatus, furniture, libraries, etc., was \$2,151,091. In

the libraries of these schools there were 157,380 volumes in raised type.

Schools for the Deaf. For the school year 1926-27 a total of 168 schools reported to the United States Bureau of Education. Of these 69 were supported by the State, 83 were parts of the city school systems, and 16 were under private control. The State schools enrolled 13,134 pupils and graduated 246. The city schools enrolled 3515 pupils and graduated 2, and the private schools enrolled 933 pupils and graduated 5. The total enrollment was 17,582. Of the total enrollment 6.6 per cent was in the high school, 29.6 per cent in the grades five to eight, 52.3 per cent in grades one to four, and 11.5 per cent in the kindergarten. Sixty State institutions and 10 private institutions reported receipts of \$7,095,631 and \$273,216 respectively. Sixty-four State institutions and 10 private institutions reported expenditures of \$7,612,739 and \$265,289 respectively. Among the schools reporting, the per capita expenses for current expenses was \$500 in the State schools and \$329 in the private schools. Sixty-two State institutions and 11 private institutions reported property valued at \$30,489,217 and \$1,793,363 respectively. This makes the value of property per pupil \$2,401 in State and \$2,657 in private institutions. The State schools employed 1724 instructors; city schools reported 417; and private schools, 162. This is a total of 2303 of whom 450 were men and 1853 were women.

Schools for Feeble-minded and Subnormal. For the school year 1926-27 a total of 303 schools reported to the United States Bureau of Education. Of these 51 were State Schools, 218 city day schools, and 34 private schools. The enrollment in the State schools was 49,791; in the city day schools, 51,814; and in private schools, 4416, a total of 104,021. Compared with the reports for 1914, there had been an increase of 78 per cent in the State schools, 376 per cent in city day schools, and 964 per cent in private schools. The receipts and expenditures for the city day schools had not been separated from the other educational receipts and expenditures. Of the State institutions, 49 report receipts amounting to \$17,588,311 and a total expenditure of \$17,048,943. In the State schools that reported both enrollment and expenditures, the expenditure per pupil for current expenses was \$286, and for buildings and lasting improvements \$66. The 49 State institutions report buildings and grounds valued at \$47,675,570 and apparatus, furniture, etc., \$6,921,610. This makes the value of property per capita enrolled \$1136.

The receipts in 24 private institutions were \$1,372,428, while 25 schools reported expenditures amounting to \$1,335,212. In the private schools reporting the expenditure per pupil, current expense was \$649, and lasting improvements \$71. In private schools the value of property per capita enrolled was \$1906. The State schools employed 580 instructors and 4047 assistants. The private schools employed 195 instructors and 435 assistants. The city day schools reported 2718 instructors and no assistants.

Industrial Schools for Delinquents. For the school year 1926-27, a total of 158 institutions reported to the United States Bureau of Education. There was reason to believe that there were at least 173 such schools. The inmates in these 158 schools numbered 65,174 boys and 19,143 girls, a total of 84,317. Of the inmates

72,803 were whites and 11,514 were colored. It is estimated that 7 per cent of the population 5 to 20 years of age is foreign born, while the number of foreign-born inmates in the schools reporting was 6 per cent. Ninety-one schools reported the inmates committed as 24,110. Of this number 2271 or 9.4 per cent could neither read nor write. One hundred fifty schools having an average enrollment of 42,645 reported property valued at \$81,930,652. The per capita investment, therefore, was \$1921. The total receipts for the school year were \$22,941,094 of which \$17,621,732 was for current expenses and \$2,869,309 was for permanent equipment. The receipts from public sources were \$18,500,390.

The expenditures totaled \$22,303,966. Teachers' salaries and teaching equipment cost \$2,118,873. The salaries of helpers and other expenses were \$14,014,847.

See **PSYCHOLOGY.**

EDUCATIONAL PSYCHOLOGY. See **PSYCHOLOGY.**

EGBERT, WILLIAM GRANT. An American violinist, died at Ithaca, N. Y., December 9. He was born at Danby, N. Y., Dec. 28, 1869. At the age of eight he made his first appearance in public, but continued his studies under local teachers in Syracuse, where he also attended the university. From 1890, for two years, he was a pupil of Joachim in Berlin. He then settled in Ithaca, where he founded the Ithaca Conservatory of Music, which became one of the foremost schools of the United States. From 1903-06 he was in Prague, with Ševčík, studying that master's new method and filling at the same time the position of concert-master and assistant-conductor of Ševčík's String Orchestra. After his return to America he introduced the new method in his own conservatory. Accepting his former pupil's invitation, Ševčík personally conducted there a master-class in 1921-22.

EGGS. See **LIVESTOCK.**

EGLIN, WILLIAM CHARLES LAWSON. American electrical engineer, died at Philadelphia, Pa., February 7. He was born at Glasgow, Scotland, July 14, 1870, and was educated at the Andersonian University, Glasgow, and the University of Glasgow. He went to America with his family in 1880, and in 1889 became connected with the Edison Electric Light Co., of Philadelphia; at the time of his death he was vice president and chief engineer of the Philadelphia Electric Company. He designed many of the company's plants, notably the modern main generating station on Christian Street, and until shortly before his death was engaged in the construction of the company's extensive hydroelectric project at Conowingo, Md. Mr. Eglin was president of the Franklin Institute of Philadelphia.

EGYPT. A kingdom in northeastern Africa, governed by a king since Mar. 15, 1922, after the termination of the British protectorate declared Dec. 18, 1914; occupying the Valley of the Nile, the Libyan desert, the region between the Nile and the Red Sea and the Sinai Peninsula; claiming jurisdiction also over the Sudan, which claim, however, is denied by the British. Capital, Cairo.

AREA AND POPULATION. The total area of Egypt proper which is described above is about 383,000 square miles. This figure does not include the Sudan. The cultivated and settled area, comprising the Nile Valley and Delta, is only 12,-

023 square miles. The last census of the settled area, taken on Feb. 18-19, 1927, gave the total population at 14,168,756; as compared with 12,750,918 at the census of March, 1917. The chief cities with their populations at the census of 1927 were: Cairo, 1,059,824; Alexandria, 570,314; Port Said (including Ismailia), 103,223; Suez, 35,547; Tanta, 89,712; Mansura, 62,815; Asyut, 57,036; Damanhur, 51,720; Fayum, 52,372. In 1917 the population was distributed among the various religions as follows: Mohammedans, 11,658,148; Greek Orthodox, 854,778; Roman Catholics, 107,687; Jews, 59,581; Protestants, 47,481. The movement of population in 1926 was: Births, 623,825; deaths, 343,864.

EDUCATION. Primary instruction is supplied by native schools called *maktabs*. In the school years 1925-26 the number of these receiving grants-in-aid and under government inspection was 2762, with 202,795 pupils and 5220 teachers, while those under the immediate direction of the Government in 1927 was 337 with a total attendance of 49,531. In addition there are higher elementary and higher primary schools, a few schools for special and technical training, and higher colleges of law, engineering, military science, veterinary science, agriculture, pedagogy, commerce and accounting, and medicine. The total number of schools under the control of the provincial councils in 1927, either through direct management or through grants-in-aid was 3899, with 339,999 pupils. The centre of Moslem culture is the mosque and university of El-Azhar at Cairo, founded in 972.

PRODUCTION. Following the depression of 1926, there was an improvement in the price of cotton during 1927, which had a favorable effect on the country's general economic condition. The estimate of the cotton crop for 1927 indicated a smaller yield than in the previous year, amounting to 1,252,000 bales (averaging 478 pounds net) as against 1,497,000 bales in 1926 and 1,629,000 bales in 1925. The acreage sown to cotton, in conformity with the Government's policy of restricting cotton growing to one-third of Egypt's cultivable land, decreased from 1,785,702 feddans (1 feddan equals 1.038 acres) in 1926 to 1,516,199 feddans in 1927. The cotton crisis of 1926 had also tended to divert agricultural activities more and more from cotton growing to other crops, in order to avoid the unfavorable consequences that might result from entire dependence on a single commodity. See **COTTON**.

The sugar industry, which had been affected in the previous year by a large world crop, was less active in 1927. A total of 702,260 tons of cane was worked in 1926-27 by the leading company as compared with 967,970 tons in the previous year. The sugar yield of cane, however, increased from 12.7 per cent to 12.86 per cent in 1926-27. The total production of raw sugar was 71,550 tons, as against 95,900 in the previous year. This quantity was augmented by imports from the Dutch East Indies. No later statistics for the area and production of other crops were available than those given in the preceding **YEAR BOOK**. In 1926 there were in Egypt 36,467 horses, 738,662 donkeys, 22,858 mules, 721,738 cattle, 763,134 buffaloes, 1,143,554 sheep, 529,972 goats, and 171,093 camels. The principal mineral products in the same year were (in metric tons): Phosphate rocks, 232,008; petroleum, 172,952; manganese iron ore, 121,868. Other

products are nitrate shale, carbonates and sulphate of soda, ochres, sulphate of magnesia, talc, building stones, clay, gypsum, nitrate of soda, salt, and turquoise.

Important irrigation work was undertaken during 1927. In April a contract was signed for the construction of a barrage of Nag Hamadi, midway between the Assiout and Isnah barrages. The object of the barrage is to change the system of irrigation of 500,000 feddans of land west of the Nile from basin to perennial watering, thus doubling or trebling the number of crops per year. Through canalization it will also perennially irrigate 115,000 feddans east of the Nile and will add 300,000 feddans on the west to basin irrigation. The cost of the barrage was estimated at £E1,976,555. The work during 1927 was financed by a budgetary credit of £E250,000, but this was exhausted before the end of the year. The budget draft for 1928-29 carried a credit of £E2,250,000 for continuation of the work on the barrage and on the canalization, which is expected to be completed around 1930.

COMMERCE. A remarkable readjustment occurred in the foreign trade position of Egypt during 1927. Although the balance for the year was unfavorable by £E379,330, this amount was insignificant as compared with the large adverse balance of £E9,270,000 in 1926. The trade deficit in that year, the first since 1921, caused a serious depression from which a gradual recovery was registered during 1927, largely in consequence of the higher prices obtainable for cotton.

Imports from the United States were valued at \$11,373,000 as against \$12,371,000 in 1926. Exports to the United States during 1927 were valued at \$33,998,000 as compared with \$27,921,000 in 1926.

FINANCE. Government finances disclosed a strong position in 1927. The reserve fund at the end of the year was estimated at £E35,000,000, as against approximately £E33,000,000 at the close of 1926. This large reserve fund, however, has elicited considerable comment from commercial circles, where it is charged that the fund is being allowed to remain unproductive in the face of urgent need for extension of transport facilities. The proposed budget for 1928-29 showed an increase in both receipts and expenditures over the approved budget for 1927-28. Receipts were stated at £E37,532,000 and expenditures at £E41,532,000, indicating a draft of £E4,000,000 on the reserve fund. This compares with an approved budget for 1927-28 showing receipts of £E36,277,000 and expenditures of £E38,919,000 and involving a draft of £E2,642,000. The principal increases anticipated in revenues for 1928-29 over the previous year were from railways, interest on invested funds, and miscellaneous receipts; larger expenditures were provided for pensions and indemnities, and for the ministry of public works.

COMMUNICATIONS. On Apr. 30, 1927, there were, exclusive of sidings, 2272 miles of rails (double and single) belonging to and worked by the State, and 854 miles of light agricultural railroads owned by private companies. The railroads reported a satisfactory year in 1927, although increasing competition was being encountered from motor-bus traffic. The increase in automobiles has also rendered inadequate the present road facilities, and an expansion of the road system of the country is being planned. Two important weekly services were inaugurated dur-

ing the year—a weekly air service between Cairo and Bagdad, with an extension to Karachi, and a through rail service between Calais and Cairo, via Constantinople and Tripoli, with a break from Tripoli to Haifa, Palestine, covered by automobile.

The number of vessels calling at Egyptian ports in 1927 increased to 8393 from 7798 in the previous year. Cargo landed during the year totaled 5,438,000 tons, as against 4,955,000 tons in 1926; cargo shipped amounted to 1,952,000 and 1,550,000 tons, respectively. Two important harbor projects for the port of Alexandria were approved during October, 1927. These involve a petroleum basin, at an estimated cost of £E320,000, and nitrate quays, at a cost of £E300,000.

GOVERNMENT. According to the constitution, promulgated Apr. 19, 1923, Egypt was proclaimed a sovereign State under a hereditary monarch, with representative government. Equal rights, irrespective of race, language, or religion, were guaranteed, as was the liberty of the individual and religious belief. Executive power is vested in the king, who also exercises legislative power in concurrence with the legislature. The latter consists of a senate and chamber of deputies, the senate to be composed of three-fifths elected by universal suffrage and two-fifths (including the president) appointed by the king (the term of office is ten years; one-half is renewed every five years); and the chamber of deputies consists of members elected by universal suffrage for a period of five years. The king can dissolve the chamber of deputies to which the cabinet is individually and collectively responsible. Mohammedanism is the State religion and Arabic the official language. King in 1928, Fuad I, who acceded to the throne Mar. 15, 1922.

HISTORY

The turbulent year through which Egypt passed in 1927 was merely an introduction to the events of 1928 when Anglo-Egyptian relations became more strained than ever before, if possible. At the very beginning of the period there were rumors that there were serious internal breaches in the Egyptian cabinet and that it might cause the resignation of Sarwat Pasha, the prime minister. The trouble blew over temporarily, however. As noted in the preceding YEAR BOOK there had been serious difficulty with Great Britain over the question of the status of the Egyptian Army, particularly with reference to the Sudan. The outcome of the dissension was the negotiation of a new treaty in the last part of 1927 and early 1928. The terms of the treaty, which was evidently based on Great Britain's desire for security in Egypt because of the necessity for control of the Suez Canal, were unsatisfactory to Sarwat Pasha's Government, and, after informing the British representatives of that fact, Sarwat offered the resignation of the cabinet to King Fuad, who induced him to hold office until a new ministry could be formed. If a new cabinet were formed from the dominant Nationalist party in the Egyptian Legislature it was almost a certainty that the demands of Great Britain would be again refused.

Although the provisions of the proposed treaty were not published at the time, it was stated in the press that among the provisions were the stationing of a British Army in Egypt for a definite space of time and the participation by Egypt on the side of Great Britain in case the

latter should become involved in a war. The status quo in the Anglo-Egyptian Sudan was to be maintained. It seems only natural to an outsider that the Egyptians should strenuously object to the presence of an alien army on the sovereign soil of a supposedly independent country.

On March 16, Mustapha Nahas Pasha, the leader of the Nationalist party, succeeded in forming a cabinet in which he himself took the posts of Prime Minister and Minister of the Interior. He stated that his only policy was stoutly to maintain the inviolability of Egyptian soil. Just prior to his selection, the terms of the Anglo-Egyptian Treaty were published by the British Government. The provisions were mainly those mentioned above. The treaty was rejected by the Egyptian cabinet, whereupon the British Government dispatched a note to the effect that, although it refrained from speaking while the treaty was being negotiated, it must call attention now to the fact that certain acts of legislation of the Egyptian Parliament dealing with the question of bearing arms and the election of heads of villages were distasteful to the British Government, which reserved the right to act as its best interests dictated. Prime Minister Nahas replied to this note of the British Foreign Office to the effect that it was an invasion of Egypt's sovereign rights which contemplated interference with internal affairs and would not be accepted in principle or fact.

The British reply, while still diplomatic, stated that Egypt could only exercise her sovereignty in internal affairs, when such action did not conflict with Great Britain's interests. Needless to say, the exchange of notes produced a high feeling in Egypt against Great Britain, and when Parliament reassembled and continued to discuss the bills objected to by Great Britain, the London Government dispatched several battleships to Egyptian waters and handed a virtual ultimatum to the Cairo authorities, demanding a statement in writing that the bill objected to (in this case a measure dealing with public assemblies) would not be proceeded with. In replying to this note Premier Nahas Pasha again denied the right of the British Government to interfere in internal affairs of Egypt, but saved the situation for the time being by saying that final action on the bill would be delayed until the November session of Parliament. Downing Street expressed satisfaction with this reply, but stated that if such measures ever came up again in the Egyptian Parliament, it would feel justified in intervening again. The tension for the time being was greatly relieved. Undoubtedly the action of Nahas Pasha prevented armed intervention in Egypt by Great Britain.

The flurry with Great Britain was followed in June by dissensions within the cabinet, followed by the resignation of several members because of the feeling that the Prime Minister failed to consult them on important matters. Mustapha Nahas Pasha was also attacked on the grounds of lacking personal integrity as were other leaders of the Nationalist party, and King Fuad asked for his resignation. When this was refused, the King dismissed the ministry on June 25.

In forming a new cabinet the King entrusted the leadership to Mahmud Pasha, a member of the Liberal party. He gathered about him a coalition cabinet comprising many of the members of the old cabinet and stated that he con-

sidered it a cabinet of transition to bridge the affairs of state until a settlement could be made between the various political groups of the country. After announcing a suspension of Parliament for a month in accordance with a provision of the constitution, the King and his new Prime Minister on July 19 issued an entirely unconstitutional decree by dissolving Parliament altogether for a period of three years, stating that legislation would be carried on by decree. The British Government stated that it had nothing to do with the issuance of such an order. The excuse given for this drastic action was the gradual disintegration of the internal administration. The Nationalist party protested and declared that it would hold meetings of its members anyhow, despite the statement of the King that such action would be met by drastic measures.

On the day appointed for the meeting of the Nationalist members of the legislature, no one appeared at the Parliament houses, but a meeting was held in private and the action of the Government condemned. In the meantime speeches were delivered throughout the country in the same tone, although no disorder took place. Thus the political status rested until the close of the year. The Nationalist members of the dissolved Parliament held secret meetings, but apparently accomplished nothing. If the press could be relied upon, the country was entirely satisfied with the new régime, although there was a decided undercurrent of feeling that fear of British intervention dictated the policy of the King and his new Prime Minister. By this action, the proposed measures of legislation, which were so distasteful to British authorities, could be indefinitely postponed.

EGYPT, ANCIENT. See **ANTHROPOLOGY**.

EGYPTIAN ARCHÆOLOGY. See **ARCHÆOLOGY**.

EINSTEIN THEORY. See **PHYSICS; RELATIVITY**.

ELECTRICAL ENGINEERS. AMERICAN INSTITUTE OF. A national organization representing the electrical engineering profession, founded in 1884. The objects of the Institute are the advancement of the theory and practice of electrical engineering and of the allied arts and sciences, the maintenance of a high professional standing among its members, and the development of the individual engineer. It is governed by a board of directors, elected by the membership, consisting of a president, the 2 junior past presidents, 10 vice presidents, 12 directors, and a treasurer. In 1928 there were 54 sections of the Institute located in various cities throughout the country and 99 branches in colleges giving courses in electrical engineering. Three annual conventions are held, in addition to regional, local section, and branch meetings. Much of the Institute's work is accomplished through its standing and technical committees, of which there were 37 in 1928. It maintains, in cooperation with other national engineering societies, the Engineering Societies Library and a national employment service. There are three grades of members, as follows: Associate, member, and fellow; and the total membership on Oct. 1, 1928 was 18,423.

The principal publications of the Institute are the monthly *Journal*, the annual *Transactions*, the *Standards of the A. I. E. E.*, and the *Year Book*. The officers elected for 1928-29 were:

President, R. F. Schuchardt; junior past presidents, C. C. Chesney, and Bancroft Gherardi; vice presidents, O. J. Ferguson, E. R. Northmore, J. L. Beaver, A. B. Cooper, C. O. Bickelhaupt, E. B. Merriam, H. A. Kidder, W. T. Ryan, B. D. Hull, and G. E. Quinan; directors, M. M. Fowler, C. E. Stephens, E. C. Stone, I. E. Moulthrop, H. D. Don Carlos, F. J. Chesterman, F. C. Harker, E. B. Meyer, H. P. Liversidge, J. A. Johnson, A. M. MacCutcheon, and A. E. Bettis; national treasurer, George A. Hamilton; national secretary, F. L. Hutchinson. The Institute's national headquarters are in the Engineering Societies Building, 33 West 39th Street, New York, of which it is joint owner with three other national engineering societies.

ELECTRICAL INDUSTRIES. The increase in the use of electric motors in the various industries was again very marked. In the industrial factories, there was in 1928 an average of 5 h.p. of mechanical power for each worker. The steel mills led with the addition of some hundreds of thousands of horse power to supplant steam engines. The most popular set-up was one in which one or more large d.c. motors drive the rolls and are supplied by an a.c.-d.c. motor generator set with a large fly-wheel so as to take a fairly steady load from an a.c. network. In one instance a 5000-h.p. induction motor was installed and in another a 3000-h.p. synchronous motor was used to drive a constant speed mill. A novel grouping for steel mills is that in which several rolls operating simultaneously on successive portions of the same piece of metal are driven by various motors all controlled automatically to cause uniform and synchronous feeding.

The largest hoist motor yet built was that of 3200 h.p. at 79 r.p.m. operating on direct current and used by the International Nickel Company.

Some electric shovels taking 12 cubic yards of earth at one scoop were built and put into service. They are rated at 550 tons and take 800 h.p. from an a.c. supply which is converted to direct current by a motor-generator set which in turn supplies the several motors. A 15-cubic-yard shovel which would weigh 1350 tons was under construction. An electric car loader was developed, which would lift a completely loaded refrigerator car and place it in the hold of a vessel. There was to be one at Havana and one at New Orleans to care for the fruit trade.

Electric Welding continued to reach into new fields. A number of buildings were constructed by welding the steel members together instead of riveting, and a railway bridge has also been so constructed. (See **BRIDGES**.) Welding also was applied to utilizing scrap steel for useful products, such as using old rails to make ties.

The electric furnace developments were indicated by the construction of a three-phase arc furnace for steel rated at 20,000 k.v.a. with automatic electrode regulation, and supplied by a large three-phase transformer. Induction furnaces for copper and brass were quite general and the high-frequency (2000 cycles) induction furnace of the coreless type for steel had been developed up to the 150 k.v.a. size. This is of advantage in making high-grade steel to a particular formula.

The automatic leveling of elevators was being accomplished by means of radio-frequency

currents eliminating the necessity of physical contacts between elevator and floor. The ventilation of the Holland Tunnel between New York and Jersey City was an application of electric drive and electric control of no small importance. It involves supplying an enormous flow of air, carefully distributed with the greatest of precautions against failure and all controlled by one operator who has in front of him a device which indicates when the air in the tunnel becomes dangerous to life because of the gas engine exhaust.

The public utility companies of the United States produced an output of 83 billions of kilowatt-hours, an increase of 10 per cent over that of 1927 and their gross income was a little over two billion dollars or about 2.4 cents per kw.-hr. Of this energy 59 per cent was produced from fuels and 41 per cent from water power. In the coal-burning stations the average consumption of fuel was 1.7 lbs. per kw.-hr. There were 23,000,000 individual customers of the companies, an increase of 1,400,000 in 1928. More than 4000 towns and villages are served by these companies.

The use of electrical machinery on the farm was increasing and there were 350,000 farms connected and served, an increase of 125,000 in three years. Among the several organizations studying the use of electrical machinery on the farm was the University of Minnesota which had published a report covering several years of study in which it is stated that "electricity, liberally and intelligently employed, has been a very material and beneficial influence."

ELECTRIC FURNACE. See CHEMISTRY, INDUSTRIAL; IRON AND STEEL.

ELECTRIC LIGHTING. The trend toward an increased level of illumination and more artistic arrangement of luminaires was vigorously pushed, along with a programme of standardization, improved methods of manufacture, and decreasing prices of lamps. There were 319 million large-sized, and 240 million miniature-sized, incandescent lamps made during the year. Of these, 59 per cent was for 115 volts and 94 per cent was for either 110, 115, or 120 volts. The number of sizes was reduced and the majority were "inside frosted" while the colored lamps were colored on the inside of the bulbs. A 10,000-watt tungsten lamp was in commercial production and a 50,000-watt lamp was built as an experiment.

The International Illuminating Congress was held in America for the first time with the main meeting at Upper Saranac, N. Y., and with visits and conferences in many of the principal cities.

There was a great popular development in sign lighting by means of Neon tubes made in the form of long tubes twisted into the shapes of letters and figures. These operate on alternating current at fairly high voltages and may be given various colors by admixture of other gases.

The subject of motor-vehicle lighting received very careful study by the various interested organizations and at their suggestion the U. S. Bureau of Standards has made a careful investigation and recommendations including standard specifications. Uniform regulations had been adopted in twenty States.

A careful study was being made of the effect of artificial light upon animal and particularly

upon plant life, it being indicated that a more rapid growth and more productive type of plant might be cultivated by this means. The use of ultra-violet light and artificial sunlight was growing in popularity and a careful investigation was being carried on to ascertain at just what point these effects ceased to be beneficial to life and became harmful. There seemed to be an indication that a wave length of 300 millimicrons was the optimistic value and that shorter wave lengths became harmful.

Much was accomplished in the improvement of illumination of air-ports by means of beacons, boundary lights, fog piercing lights of gaseous construction, and the lighting of 12,000 miles of airways.

The photo-electric cell was improved and applied to many new uses, among others in a color analyzer which gives the amount of light in each wave length which is given out by the subject of analysis.

ELECTRIC POWER TRANSMISSION.

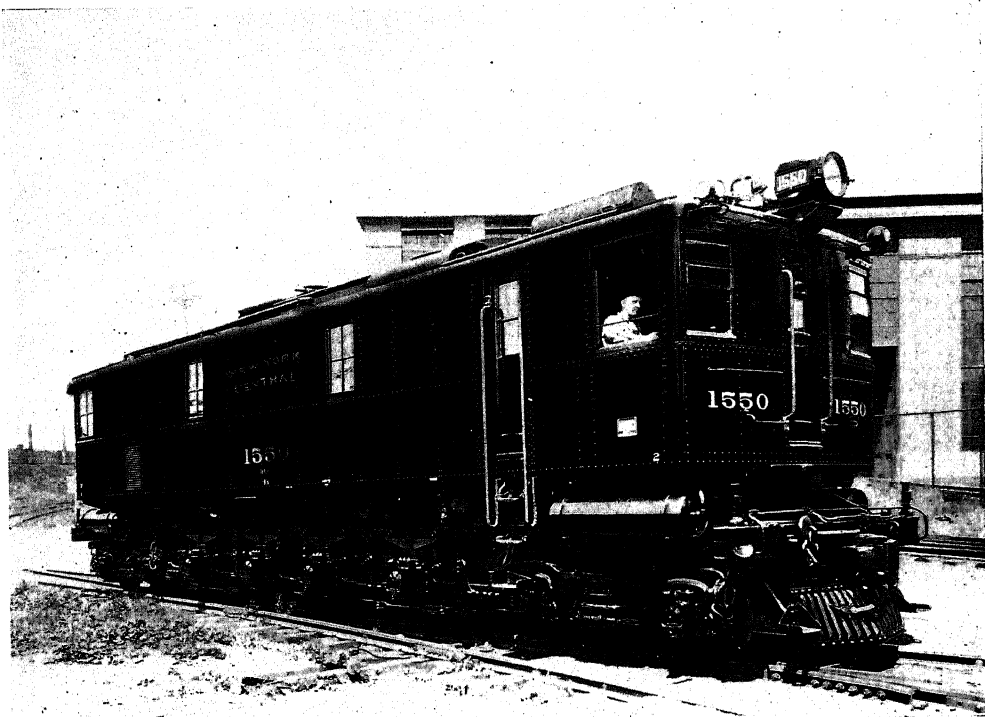
With the increasing length and ramification of transmission lines, protection from lightning has become of the greatest importance in maintaining reliability of service. This, therefore, was the most prominent subject of investigation and discussion in the year under record. Records were kept on a number of systems of the frequency of lightning discharges and their physical effects on the apparatus. New instruments were devised to record or picture the lightning discharge, such as the Klydonograph and the Cathode-Ray Oscillograph, both of which give quite an interesting story about an event which lasts only a few millionths of a second. The use of an overhead ground wire, of string insulators with scientifically designed "arcing-rings" and the introduction of commercial lightning arresters for 220,000 volts helped to protect the lines.

The line insulators were improved as a result of the development for testing purposes of "Lightning Generators," capable of giving an impulsive discharge at as high as 3,600,000 volts, by charging capacitors in multiple and discharging them in series. Two million one hundred thousand volts is the highest potential available for steady application. This was obtained from a transformer.

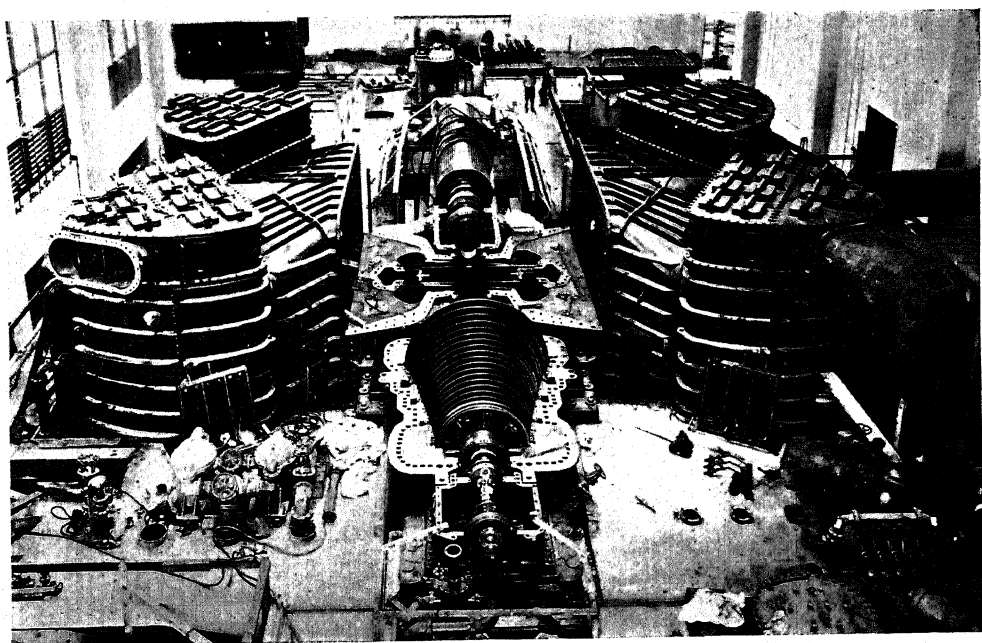
There had been an increase in the number of transmission systems using 220,000 volts, notably in New Jersey, the Conowingo project, and the Ontario Commission system. This was still the highest voltage in commercial use in the United States, but Germany had a line operating at 380,000 volts.

Interconnection of systems progressed slowly as a practical operation, mostly by tying together neighboring systems, as, for instance, three different systems in New Jersey and Pennsylvania. Of academic interest is the fact that at one time during the year a complete electrical connection was made from Chicago through to Boston, by means of the intervening companies and systems. Similarly at another time a tie was made between Chicago and Florida. These experiments are of interest in showing that all the various power stations in the system could be held in step or in synchronism with each other.

It was reported that the two installations of oil-filled underground cables for 132,000 volts, which were installed in 1927, had given successful service and that several such installa-



OIL-ELECTRIC FREIGHT LOCOMOTIVE
BUILT FOR PUTNAM DIVISION, NEW YORK CENTRAL RAILROAD. EQUIPPED WITH
INGERSOLL-RAND ENGINE AND GENERAL ELECTRIC GENERATOR, MOTORS,
AND CONTROL



TURBINE-GENERATOR OF SOUTHERN CALIFORNIA EDISON COMPANY
TURBINE-GENERATOR SET OF 94,000 KILOWATTS CAPACITY BUILT BY GENERAL ELECTRIC
COMPANY AND SHOWN PARTLY INSTALLED AT THE LONG BEACH STATION

ELECTRICAL DEVELOPMENTS OF 1923

tions of oil-filled, three-conductor cables had been installed for 33,000 volts.

A 40,000-k.v.a., 29,000-volt, three-phase self-cooled transformer having an efficiency of 99.54 per cent was built by the Westinghouse Company for the United Electric Light and Power Company of New York. This was a record for size and efficiency. Three 28,866-k.v.a. single-phase transformers, for operation at 220,000 volts three-phase, were built by the General Electric Company and surpass in size any others for this high potential.

There had been a great increase in the use of transformers with load-ratio control by tap-changing with improvements in the mechanism to make it automatic and to prevent short-circuiting parts of the windings during the operation. They are made for single-phase or three-phase and it was reported that 40 per cent of the transformers of sizes of 20,000 k.v.a. and larger were built of this type.

The use of the series capacitor to neutralize the inductive drop in a transmission line was introduced during the year by the installation of three capacitors of 415 k.v.a. and 3170 volts on a 33,000-volt three-phase transmission line. This eliminates all voltage losses in the line except that due to resistance.

In distribution networks there had been a decided trend to supersede direct current and two-phase alternating current networks by a system of four-wire three-phase networks with some special developments in step-down transformers for this purpose.

In protective devices the development of "quick-break" circuit breakers of both the air-break and oil-break type has been noteworthy and has given much improved protection to the circuits and the apparatus. The endeavor to correct the power factor of systems has continued by the installation of static condensers and synchronous condensers. An example of the latter is a 30,000 k.v.a. machine at 720 r. p. m. for the Philadelphia Electric Company.

ELECTRIC RAILWAYS. Serious planning for the electrification of some of the most important trunk-line steam railways was the most interesting feature of the year 1928. The Pennsylvania continued actual work and increased the scope of its plans to include about 325 route miles extending from the Hell Gate Bridge on Long Island through New York and Philadelphia to Wilmington for southern traffic and to Atglen, Penn., 47 miles west of Philadelphia, for western traffic. \$100,000,000 was appropriated for this purpose, although it was recognized that the completed system would cost more. The Pennsylvania had chosen the single-phase system with an overhead trolley at 11,000 volts and 25 cycles. The New York Central at the end of the year announced its intention of carrying its electrification through to Buffalo, a total of 440 miles. The Central had adopted direct current at 600 volts for its New York terminal and direct current at 3000 volts for its Cleveland installation, but it had not been announced what system had been chosen for this latest proposal. The New York Central was completing the electrification of the Cleveland Union Terminal involving 17 route miles, 25 locomotives of 204 tons and 3000 h.p. each.

The Great Northern had completed the construction of its new Cascade Tunnel, $7\frac{3}{4}$ miles in length, which is operated at 11,000 volts

single phase with 260-ton electric locomotives using d. c. motors supplied from a motor-generator set. This is part of the electrified section from Wenatchee to Skykomish, 23.5 miles of heavy grade. See **TUNNELS**.

The Philadelphia & Reading announced its intention of electrifying its Philadelphia local section with 11,000-volt single-phase, multiple-unit suburban trains at a cost of \$20,000,000. The Delaware, Lackawanna & Western was at work on the electrification of its Hoboken terminal and suburban section with direct current 3000 volts using locomotives and multiple-unit trains.

A new type of car for street railways was known as the "Bus Type." It was a light-weight car with a body like a bus propelled by four automotive-type motors with double reduction gear and had a total weight of 16,000 pounds. It is one example of the endeavor to reduce the amount of dead weight on street railways and is a special example of the one-man light-weight car which continued to increase in its application.

Special attention was given to the control systems of trolley cars by which the rate of acceleration was increased to 3.5 and 4 miles per hour per second without discomfort to its passengers. This was accomplished by an ingenious method of providing more steps on the control which causes the rate of acceleration to increase gradually. This results in considerably faster schedules without increasing the maximum running speed of the cars.

The use of oil-electric locomotives and gas-electric motor cars and busses had increased and the former were supplanting the steam switchers in industrial factories. There had been a number of new installations of increased capacity of mercury-arc rectifier sub-stations for railways to take the place of synchronous converter stations. Notable among these were: the two 750-kw., 1500-volt units for the Piedmont Railway and for the Chicago South Shore & South Bend Ry.

See also **RAILWAYS**.

ELECTRONS. See **PHYSICS**.

ELEMENTS. See **ASTRONOMY**; **CHEMISTRY**; **PHYSICS**.

ELLIOTT, El'z't, HOWARD. American railway executive, died at Dennis, Mass., July 8. He was born at New York, Dec. 6, 1860, and was graduated from the Lawrence Scientific School, Harvard University, as a civil engineer, in 1881. After serving in several capacities with the Chicago, Burlington and Quincy R. R., until 1887, he became general freight and passenger agent of the St. Louis, Keokuk & Northwestern Ry., a part of the Burlington system, and later he was general freight agent (1891-96) of the Missouri lines, general manager of the entire system (1896-1902), and the second vice president (1902-03). He was president of the Northern Pacific Railway Co. from 1903 to 1913, doing much to develop and extend the system and in the latter year he became president of the New York, New Haven & Hartford R. R. He resigned this office before the end of the year and became chairman of the board of directors. In 1917 he was appointed to the office of chairman of the commission on intercorporate relations of the road, retaining the office until 1922. In 1920 he was appointed chairman of the Northern Pacific Ry. He retained his connection with that system until his death. During the World War, Mr. El-

liott was a member of the special committee on national defense of the American Railway Association. He took an active interest in Harvard University, and was a member of the board of overseers, 1909-15, 1916-22, and after 1924; was president in 1925; and president of the Harvard Alumni Association. He was also a life member of the corporation of the Massachusetts Institute of Technology, and a member of many learned and patriotic societies. In 1916 he received the degree of LL.D. from Middlebury College. He was a director of a number of large railway and financial corporations.

ELLIOTT, SARAH BARNWELL. American author, died at Sewanee, Tenn., August 30, at the age of eighty. She was born at Savannah, Ga., and living in New York City part of the time, she soon made herself known by her sympathetic stories of Tennessee mountaineers. The first of these was *Jerry* (1889), which was published serially in *Scribner's Magazine*, and later translated into German, and republished in Australia. *The Durket Sperret* (1897) was another of her popular Southern tales. She also wrote *The Fellers* (1889); *An Incident and Other Happenings* (1889); *Sam Houston* (1900); *The Making of Jane* (1901); and a play, *His Majesty's Servant*, which was produced in London. She was active in the woman-suffrage movement in the South and other feminist activities.

ELLIOTT, WALTER. American Roman Catholic clergyman, died at Washington, D. C., April 18. He was born at Detroit, Mich., Jan. 6, 1842, and was educated at the Christian Brothers College and Notre Dame University. He served throughout the Civil War in the Union army, as a private in the Fifth Ohio Volunteers. In 1872 he was ordained to the priesthood in the Church of the Paulist Fathers, New York, and he devoted much of his energies thereafter to the work of building up the order. Father Elliott spent 56 years as a missionary and trainer of missionaries for his church. In 1903, with the Rev. Alexander P. Doyle, he founded the Apostolic Mission House at Washington, D. C. He lectured throughout the United States, and wrote several books. Among them were: *The Mission Sermons; Life of Christ* (translated into many modern languages); *Jesus Crucified; The Life of Isaac T. Hecker; Parish Sermons; and Spiritual Life.*

EMPLOYER'S LIABILITY. See **WORKMEN'S COMPENSATION.**

ENCEPHALITIS. See **SLEEPING SICKNESS.**

ENCYCLICALS. See **ROMAN CATHOLIC CHURCH.**

ENDOWMENTS, COLLEGE. See **UNIVERSITIES AND COLLEGES.**

ENGINEERING. See **BOILERS; BRIDGES; CANALS; DAMS; DYNAMO-ELECTRIC MACHINERY; FIRE PROTECTION; GARBAGE AND REFUSE DISPOSAL; PORTS AND HARBORS; RADIO TELEGRAPHY AND TELEPHONY; TUNNELS; ETC.**

ENGINES, GAS OR OIL. See **INTERNAL COMBUSTION ENGINES.**

ENGINES, STEAM. See **STEAM TURBINES.**

ENGLAND. The term in its strictest sense applies to the largest and most densely populated part of the Island of Great Britain. As employed in reference to the government, it often indicates the United Kingdom and Ireland. See **GREAT BRITAIN.**

ENGLAND, CHURCH OF. The Established Church of England. Its faith is represented in the United States by the Protestant Episcopal

Church (q.v.). The King is the supreme governor of the church, possessing the right to nominate to vacant archbishoprics and bishoprics. The King and the First Lord of the Treasury also appoint to certain deaneries, prebendaries, and canonries, and the Lord Chancellor to certain canonries. For administrative purposes the country is divided into two provinces: the Convocation of Canterbury and the Convocation of York, each under the control of an archbishop. The Church Assembly, established in 1920 "to deliberate on all matters concerning the Church of England and to make provisions in respect thereof," consists of three Houses, composed of bishops, clergy, and laity respectively, the laity being elected every five years by the lay members of the Diocesan Conferences, which consist of representatives elected by members of the church. Every measure passed by the Church Assembly must be submitted to an Ecclesiastical Committee, consisting of 15 members of the House of Lords and 15 members of the House of Commons. This Committee reports on each measure to Parliament, and the measure becomes a law if it is passed by both Houses of Parliament. Parochial affairs are managed by the lay members of the Diocesan Conferences.

The outstanding event of the year under review was the controversy which centred round the Prayer Book. It will probably be remembered that the Prayer Book Measure of 1927 was rejected by the House of Commons Dec. 15, 1927, by a majority of 33. The House of Bishops decided early in January to present to the Church Assembly a new Prayer Book Measure, 1928, which purported to explain clearly beyond the possibility of misconstruction the controversial proposals contained in the Deposited Book. It was introduced for final approval at a special session of the Church Assembly held April 26 and 27, when, after having passed through all its stages, it received final approval by 296 votes to 153. It then came before the House of Commons June 13 and 14, but was again rejected, by 266 votes to 220. The majority of diocesan bishops subsequently consulted their clergy in Synod and the lay members of diocesan conferences regarding the situation that was thus created. The Bishops had vested the copyright of the additions and alterations in the 1928 Prayer Book in the Central Board of Finance, and they asked that board to arrange with the privileged press for the publication of the new Prayer Book in the 1928 form with a prefatory note stating that its publication was not intended to imply that the book was authorized for use in churches. The book was, therefore, brought out and placed upon the market on Tuesday, December 4.

In addition to the special work carried out in connection with the Revised Prayer Book, three ordinary sessions of the Church Assembly were held in February, July, and November, when many matters of importance came up for discussion and decision. The *Ecclesiastical Commissioners Measure*, 1928, which extended the powers of the Ecclesiastical Commissioners so as to enable them, if they thought fit, to make grants out of their common fund, by way of additional stipend or otherwise, to elderly, unbeneficed clergymen holding curacies or doing work of a like nature, received Royal Assent July 2. The *Clergy Pensions (Amendment) Measure*, 1928, amending the principal measure by

settling points of uncertainty which arose in the interpretation and application of it, and relieving the clergy from hardships which resulted from it in certain cases, received Royal Assent August 3. The other provision receiving Royal Assent was the *Tithe (Administration of Trusts) Measure*, which improves the condition of tithe-owning clergy by providing for equal quarterly payments of tithe by arrangement between the Governors of Queen Anne's Bounty and the Ecclesiastical Commission. Advances to enable the governors to pay incumbents were provided for. (Royal Assent, August 3.)

Other proposals considered by the Assembly included: *The Cathedrals Measure*, prepared by the Cathedral Commission and introduced at the summer session, to establish a body of Cathedral commissioners with power, subject to various necessary consents, to make schemes for the better government of Cathedral and Collegiate churches. After a long debate the motion for general approval was adjourned until the autumn session when it was again considered at great length, and carried by a large majority. It was provided that the Commission should be set up for seven years only. The *Incumbents Resignation Acts (Amendment) Measure* was considered at the summer and autumn sessions when it was referred to a committee to determine whether there were other financial resources available for pensions to clergy who were outside the scope of the Clergy Pensions Measure. The *Parsonages Measure*, consolidating and amending the law relating to the sale and purchase of parsonage houses, received final approval and was before the Ecclesiastical commissioners at the end of the year. The *Marriage Measure*, providing that marriages may be solemnized in any church which is the usual place of worship of the persons to be married or of either of them, received general approval at the autumn session.

The important church events of the year included: The passage of the *Indian Church Measure* by the Church Assembly, and the *Indian Church Act* passed by Parliament, which came into operation on Jan. 1, 1928, by an Order in Council; and the consecration of the following bishops: The Rev. G. B. Allen, D.D., as Bishop Suffragan of Sherborne, and the Rev. W. G. Hardie, as Assistant Bishop of Jamaica, by the Archbishop of Canterbury in Lambeth Palace Chapel, May 6; the Venerable W. Stanton Jones, as Bishop of Sodor and Man, in York Minster by the Archbishop of York, June 11; the Rev. C. E. Curzon, as Bishop Suffragan of Stepney, in St. Paul's Cathedral October 18, by the Archbishop of Canterbury; and Canon J. B. Seaton, as Bishop of Wakefield, in York Minster by the Archbishop of York, November 1. The following Bishops resigned their Sees in addition to the Archbishop of Canterbury: The Rt. Rev. B. O. F. Heywood, D.D., from the See of Southwell owing to ill health, and the Rt. Rev. G. R. Eden, D.D., from the See of Wakefield. The following were among the principal church appointments in 1928: The Most Rev. Dr. Cosmo Gordon Lang, Archbishop of York, to be Archbishop of Canterbury in place of Dr. Randall Thomas Davidson. Dr. Lang was enthroned in Canterbury Cathedral December 4; the Rt. Rev. Dr. William Temple, Bishop of Manchester, to be Archbishop of York; the Rt. Rev. Dr. F. S. Guy Warman, Bishop of Chelms-

ford, to be Bishop of Manchester; the Rt. Rev. Henry Mosley, Bishop Suffragan of Stepney, to be Bishop of Southwell; Canon H. A. Wilson, Rector of Cheltenham, to be Bishop of Chelmsford; Canon J. B. Seaton, principal of Cuddesdon College, to be Bishop of Wakefield.

The Islington Clerical Conference, which has been held every year since 1827, took place at the Church House, Westminster, January 10; the Anglo-Catholic Congress anniversary meetings held at the Albert Hall July 5, discussed *Christian Internationalism* and were addressed by the Bishop of Manchester, Dr. P. N. Waggett, the Bishop of Colombo, the Bishop of Truro, and Sir Henry Slessor; other Anglo-Catholic congresses and conferences were held in various parts of the country, the most important being those at Norwich and Southend in October. The Church Congress took place at Cheltenham, October 2-5, under the presidency of the Bishop of Gloucester. The general subject was *The Anglican Communion: Past, Present, Future*. The membership was about 2400. At the Modern Churchmen's Conference held at Cambridge, September 17-24, the general subject was *The Christian Religion in Relation to History*.

The Convocations of Canterbury and York which met in March and July discussed such topics as *The Future of the Church of England Temperance Society; Disarmament; and Reunion in South India*. In March, the convocations met in joint session and passed a resolution that the *Prayer Book Measure, 1928*, should be laid before the National Assembly of the Church of England for final approval. The sixth and final report of the Missionary Council of the Church Assembly, *The Call to West and East*, published October 23, dealt with the Jewish people, the Oriental dispersions, the West Indies, the aboriginal peoples, and those fields not hitherto covered by the first five reports, and included a section restating the missionary task of the Church of England. The students from Oxford and Cambridge and the modern universities devoted special effort to making known the "World Call" in many towns and villages throughout England, as many as 1475 parishes being visited by 616 students, of whom 563 were men and 53 women. The meetings, both in populous centres and rural areas, were well attended and the movement met with marked success.

Dr. Randall Davidson resigned the See of Canterbury November 12, after having held the position of primate for more than 25 years. He was created a Baron of the United Kingdom. A tribute fund was opened in the summer to give all church people an opportunity of expressing to the archbishop their gratitude for the services he had rendered to the church and nation; a large number of contributions were received from all classes of people; and a gift upward of £15,000 was presented to the archbishop at Lambeth Palace on the day of his retirement.

At the July session, Lord Grey, chairman of the Central Board of Finance, presented the Church Assembly Budget for 1929. It amounted in all to £146,271, the chief items being £32,700 for religious education, £50,000 for the clergy pensions scheme, and £20,000 for training new candidates for the ministry. The bulk of this sum was apportioned to the dioceses. The contributions to the 1928 budget from all sources up to the middle of December amounted to £70,167. The amount contributed by the dioceses up

to this time showed an improvement on the previous year, in spite of the fact that unemployment and the depression in trade and industry throughout the country still continued to be acute. Church finance as a whole was not unsatisfactory, inasmuch as contributions to the larger societies and institutions were, generally speaking, up to the average. A second appeal for sponsors for ordination candidates appeared in the *Times* and elsewhere in April, as a result of which £26,500 was received and promised, making possible a financial provision for 143 candidates for ordination.

Officers of the Assembly for the year were: Chairman, the Archbishop of Canterbury; vice chairman, the Archbishop of York; treasurer, Col. Sir R. Williams, Bart.; secretary, Sir Philip W. Baker-Wilbraham, Bart.; chairman of the House of Bishops, the Archbishop of Canterbury; chairman of the House of Clergy, the Dean of Westminster; chairman of the House of Laity, the Earl of Selborne, K.G. Headquarters are at 8, Dean's Yard, Westminster, S.W. 1, London.

ENGLISH ARCHÆOLOGY. See **ARCHÆOLOGY**.

ENGLISH LANGUAGE. See **PHILOLOGY, MODERN**.

ENGLISH SPEAKING UNION. See **INTERNATIONALISM**.

ENTOMOLOGY, ECONOMIC. The year 1928 saw the advance into new territory of several invading pests of foreign origin and major importance, particularly the gipsy moth, European corn borer, Japanese beetle, Mexican bean beetle, and pink bollworm. The reorganization in the Federal Department of Agriculture, as provided for in the Agricultural Appropriation Act, effective on July 1, whereby the regulatory and control activities affecting plants and plant products were consolidated under the newly organized Plant Quarantine and Control Administration, was of far-reaching importance. This Administration supplanted the Federal Horticultural Board and enabled the Bureau of Entomology to devote its attention exclusively to research work, for which \$1,969,658 was appropriated, an increase of \$200,613 over the allotment for similar activities the preceding year. The new Administration received an initial allotment of \$2,971,050, an increase of \$307,820 over the preceding year.

The entomological profession sustained a loss in the death of Dr. Eugene Amandus Schwarz, America's leading coleopterist and one of its best-known and beloved members, which took place at Washington, D. C., on October 15 at the age of 84. Dr. Schwarz had been connected with the U. S. Department of Agriculture continuously since 1877.

EUROPEAN CORN BORER. The 1927 clean-up campaign resulted in a great reduction in the abundance of the corn borer and prevented commercial damage to the corn crop in 1928, although the natural spread of the insect by flight continued, particularly in Ohio and Indiana. The spread extended northward in Michigan, northward and eastward into the Connecticut River Valley in Massachusetts and the western tier of counties in Vermont and into Marshall County, West Virginia. The pest was found for the first time in the Province of New Brunswick. An act authorizing an appropriation of \$7,000,000 for a second control campaign, made with a view to reducing the natural spread of the pest, was passed by

Congress, but adjournment took place without the appropriation of the necessary funds. A report upon investigations of its life history and habits in Europe extending over a period of four years was published. The investigators found it to be generally distributed throughout Europe and practically always present in corn-growing areas, but rarely of any economic importance except in certain areas in central Europe. This control in Europe was said to be due to a complex group of agricultural, meteorological, and parasitic factors. The work of introducing parasites of the pest from Europe progressed, seven species having been recovered indicating that they are established.

The fourth annual conference of the International European Corn Borer Organization was held at Toledo, Ohio, on September 27 and 28. A memorandum regarding the effect of the clean-up and report upon the 1928 infestation survey authorized by the conference was issued in mimeographed form in connection with the report of the proceedings.

GIPSY MOTH. A heavy defoliation was caused by the gipsy moth in Maine, New Hampshire, and eastern Massachusetts, and small striped areas appeared in eastern Vermont and in a few towns in Massachusetts west of the Connecticut River, the total acreage of defoliation being larger than the preceding year. The infestation continued to increase in many areas. The condition in the barrier zone showed improvement in the northern and southern part except in the town of Wallingford, Conn., where a large woodland colony was found. The territory in the southern part of Berkshire County and in northern Connecticut developed more infestations than usual and is now the most threatening area in the zone. Several colonies were found in the New York area of the zone. The extermination work in the infested area in New Jersey was marked by continued progress, only five small colonies having been found, a decrease by seven from the preceding year.

The quarantine against towns in Quebec was withdrawn as a result of the effective eradication measures that resulted in the apparent extermination of the colony near Henrysburg, Quebec. The work with parasites was pressed with vigor, 100,000 tachinids and a few Hymenoptera having been introduced from Poland and Hungary. Over 4,600,000 parasites were reared and liberated during the year.

JAPANESE BEETLE. The Japanese beetle continued its spread, having been found as far east as New London and Hartford, Conn., and Springfield, Mass.; southward at Hagerstown, Md., Washington, D. C., and Alexandria, Va.; and westward at Lewiston and Sayre, Pa. It was found to occur generally throughout northwestern and eastern Maryland and in many places in Delaware. In the central portion of the infestation it was somewhat less prevalent than during the past half-decade. The enforcement of Federal and State quarantines to prevent the spread of the beetle was continued. In investigational work it was discovered that many varieties of nursery plants could be successfully treated with water at temperatures between 110° and 112° F. for destruction of the beetle larvæ without injury to the plant. A new formula for the preparation of an improved miscible carbon disulphide emulsion which remains homogeneous indefinitely in storage was developed and commer-

cialized. Improved methods for the manufacture of oleate coated lead arsenate on a commercial basis were worked out.

MEXICAN BEAN BEETLE. The bean beetle continued its spread and invaded new territory in both Michigan and New York, two of the leading bean producing States. The beetle was unusually abundant in the Carolinas, completely defoliating plants in some localities. It was recorded for the first time from the greater part of New Jersey and Delaware. The spread into the Coastal Plain area in New Jersey and the eastern shore of Maryland and Virginia, where there is a heavy production of green beans for both market and canning, was not expected to result in the injury that occurs in the more mountainous territory, since in the Coastal Plain area farther to the south the beetle is only sporadically a pest and is not generally of widespread importance. It was found to occur at points in Norfolk, York, and Essex counties, Ontario.

DATE SCALE ERADICATION. The promising outlook for the completion of the eradication of the *Parlatoria* date scale from the United States received a setback late in 1927, when several new infestations were discovered in California and Arizona. To meet this menace, a supplemental appropriation of \$25,000 was made available by Congress in the Deficiency Bill of December, 1927, to continue so until June 30, 1929. A complete and thorough census and inspection was commenced of the date plantings in California, Arizona, and Texas. Some 5600 date palms were given the eradication treatment consisting in defoliating and torching the trees with a gasoline torch.

PINK BOLLWORM. In the first three months of 1928 seven additional counties of western Texas were found infested following the detection of bollworms there on Dec. 21, 1927. The fact that nearly 400,000 acres of cotton were grown in these seven counties and that the new area was on the edge of the main cotton belt, cotton planting being more or less continuous eastward to the Atlantic coast, gave this infestation an importance vastly greater than the earlier infestations. In order to meet the situation and effectively combat the pest, the sum of \$687,800 was appropriated by Congress, \$200,000 of which became available early in March.

The only important change in the infested areas in southeastern Arizona and southwestern New Mexico was the finding of the pink bollworm in an isolated field in the Santa Cruz Valley of Arizona. The sum of \$90,000 included in the first Deficiency Act of 1928 became available in December, 1927, for the purpose of cleaning up the western areas. Extensive investigations of the biology of the pest were conducted both in Mexico and in Texas.

COTTON BOLL WEEVIL. Studies in Texas showed that 70 per cent of the boll weevils that are killed by calcium arsenate obtain the poison by picking the particles of dust from the surface of the leaves or stems and only 30 per cent from poison in the dust obtained by feeding on the squares and bolls. The work indicated that better control was obtained on plants having a pubescence to retain the particles of dust than on those which lack it. See also BOTANY.

THURBERGIA OR ARIZONA WEEVIL. This native variety of the boll weevil continued to increase in cultivated cotton in the Southwest and was

found more abundant throughout the infested area than ever before. It was found to be quite generally distributed in all cotton plantings south of Tucson and was also found without difficulty in the cotton plantings just north of the city. Its eradication in nature is considered hopeless, and since even partial eradication is not now feasible an attempt is being made to develop a means of reducing and holding the danger zone to a minimum as its production of weevils constitutes a menace to other areas. In the control work, 5336 tons of cottonseed were sterilized under the provision of the quarantine during the season and 10,672 bales of cotton lint and linters were compressed and then fumigated under vacuum with hydrocyanic-acid gas.

ALFALFA WEEVIL. The alfalfa weevil which spread along the Wyoming-Nebraska State line the preceding year was found at Henry in Scotts Bluff County, Nebr. This is of particular importance because of its approach to one of the great Eastern centres of alfalfa production.

SWEET POTATO WEEVIL CONTROL. In control work with the sweet potato weevil in Mississippi and Alabama, over 4500 farms were inspected, and infested farms, 12 in Mississippi and 23 in Alabama, thoroughly cleaned at harvesting. The Florida and Georgia area, in which 250 farms were found infested in 1919 and cleaned up, was released as free from weevil, none having been detected since 1924.

ORIENTAL PEACH OR FRUIT MOTH. Although not abnormally destructive throughout the greater part of its range, the peach moth was found as far north as Jackson and Williamson counties, Ill., was quite serious in Greene County, Ohio, and was recorded as far south as central Florida.

MEXICAN FRUIT WORM. The control work with this citrus pest, which appeared in grapefruit orchards in the lower Rio Grande Valley in May, 1927, appears to have been most successful. The enforcement of quarantine restrictions and drastic clean-up and eradication work has apparently prevented its reappearance in the district, and the large crop of 1927-28 was harvested without the discovery of a single infested fruit.

INSECTICIDE CONTROL OF INSECTS. In onion thrips control work in Nebraska a 1-to-500 solution of nicotine sulphate reduced the number of thrips by 75 per cent, the yield having been 18 per cent greater where control was attempted. A 1-to-800 nicotine sulphate spray killed nearly 90 per cent of the flour thrips infesting strawberry blossoms in Florida and even better results were obtained from dusting the plants with a mixture of equal parts of sulphur and finely ground tobacco analyzing 2 per cent nicotine. The latter not only killed thrips in the blossom but acted as a repellent and delayed reinfestation for several days and also controlled red spiders. De Ong pointed out that the value of petroleum oil as a spray is not confined to its insecticidal value alone but includes a potential value as a carrier for other and more active chemicals which may act as insecticides and fungicides or perform functions not now recognized. In work with scale insects in the lower Rio Grande Valley, the use of oil emulsion made with canal water proved unsafe for spraying citrus. Fumigation for the scale gave a mortality of 98 per cent, but it was found unsafe to fumigate in the spring or early summer.

MOTH-PROOFING FABRICS. A more general use of the moth-proofing of fabrics against injury

took place during the year. Experiments demonstrated that when the fabric is thoroughly impregnated with the best solutions, preferably before the goods leave the manufacturing plant, they give a moth resistance that is of practical value.

MOSQUITO TRANSMISSION OF DISEASE. In investigations conducted at Manila, P. I., dengue fever was transmitted by the yellow-fever mosquito when the interval between the infectious feed and the subsequent biting was 8 to 10 days or longer and not when the interval was 6 days or less. In investigations conducted on monkeys in Nigeria, West Africa, by the Rockefeller Foundation, the virus was transmitted through the bite of mosquitoes in one experiment on and after the ninth day and in two experiments on the twelfth day after the initial infecting feed. In transmission experiments with yellow fever in West Africa, *Aedes luteocephalus* and *A. apicoannulatus* were able to transmit yellow fever in all respects in the same manner as *A. ægypti*.

APICULTURE. Two hitherto unrecognized diseases of the honeybee were discovered during the year. The first, a new disease of the adult, was found to be caused by an organism to which the name *Bacillus apisepeticus* was given. The second, a disease of recently emerged adult bees which reached the nature of an epidemic among day-old bees, was discovered to have been caused by the fungus *Mucor hiemalis*.

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See also Zoölogy, under *Insects*.

EPILEPSY. KETOGENOUS DIET IN ADULTS. The success of the ketogenic diet in epilepsy in children has been discussed in the YEAR BOOK for 1927 and at that time little had been said as to the results of the diet in adult epilepsy. In the *Journal of the American Medical Association* for July 14, 1928, Dr. Barborka of the Mayo Foundation takes up the latter subject. In 1922 the experiment was initiated of testing the diet in question on adult epileptics, but at first only a few patients were subjected to it. In 1924 the experiment seems to have begun on a larger scale. In all 49 adults were dieted, but 17 were not inclined to coöperate, so that only 32 cases can be quoted. Of this number seven patients have had their convulsions controlled completely, while seven others have shown improvement. Five others had their seizures controlled, but were also taking luminal, which may or may not have been a contributing factor, although control did not set in until the diet was begun. The remaining 13 pa-

tients did not benefit at all from the diet. Thus far it can only be asserted that children do better under the diet than adults, but the fact that 60 per cent of adults showed favorable results is very significant. There are several difficulties connected with this plan of feeding which may make it difficult to carry out in routine, but the intelligent and willing patient can diet himself, even if he has had but limited educational facilities.

PREVENTION. That epilepsy can be recognized before the convulsions appear and can be prevented like tuberculosis or other disease is the belief and hope of a few men of whom Dr. R. L. Dixon, head of the Michigan Farm Colony for Epileptics, is one. It is true that nothing is known of the causes and mechanisms of epileptic phenomena, but research in progress at the Farm Colony seemed to show that the disease may be recognized in its incipency and this being the case it may be possible to prevent it. The large sums of money spent on epileptics were being devoted only to custodial care and the staffs of colonies, etc. are too busy with routine to take up research; hence no advance is possible until research institutes and laboratories with special investigators to devote all of their time to the problems can be established. No State had such a programme, but the Michigan Legislature had been asked to provide one and Dr. Dixon believed that it would be forthcoming.

EPIRUS. A geographical expression applied to a territory, the northern part of which belongs to Albania and the southern part to Greece. The boundaries are indefinite. The Greek portion corresponds to the departments of Yanina and Prevesa, with populations in 1923 of 173,304 and 52,462, respectively. Northern Epirus had an estimated population of 250,000.

EPISCOPAL CHURCH. See PROTESTANT EPISCOPAL CHURCH.

EPWORTH LEAGUE. See METHODIST EPISCOPAL CHURCH.

ERGOSTEROL. See FOOD AND NUTRITION under *Vitamins*; RICKETS.

ERITREA. An Italian colony in Africa. It lies on the coast of the Red Sea, extending from Cape Dumeirah and the Strait of Bab-el-Mandeb to Cape Kasar, a distance of 670 miles. Area, 45,754 square miles; population, at the census of 1921, 402,793 natives and 4251 Europeans. The seat of government is Asmara, situated 7765 feet above sea level, with a population of 14,711, of whom 2500 are Europeans. Massawah is the principal trade centre, with a population of 2275 in 1923. The natives are chiefly Coptic Christians and Mohammedans and they speak a dialect of Abyssinian in the plateau region and Arabic in the lowlands. The local trade is almost entirely confined to camels, oxen, sheep, goats, and their products. Although there is abundant grazing land, the pastoral population is largely nomadic. There is considerable trade in palm nuts, and pearl fishing is pursued at Massawah and in the Dahlak Archipelago. For the fiscal year 1927-28, the revenue and expenditure of the colony were estimated at: Colonial revenue, 42,455,000 lire; expenditure for colonial administration, 26,330,250 lire, and for military purposes, 16,125,250 lire. Governor in 1928, Dr. Jacopo Gasparini (appointed in 1923).

ERROLL, EARL OF (VICTOR ALEXANDER SERELD HAY, TWENTIETH EARL OF ERROLL). British diplomat, died at Coblenz, Germany, February 19. Born Oct. 17, 1876, he began his diplomatic

career as an attaché in 1900, becoming third secretary in 1902, second secretary in 1906, first secretary in 1913, and counselor in 1919. He was first secretary of the legation at Copenhagen in 1918-19, and chargé d'affaires at Berlin on the resumption of diplomatic relations between Great Britain and Germany in 1920, until the arrival of the ambassador. Subsequently, and until November, 1921, he was counselor of the embassy at the German capital. From 1921 until his death he was British high commissioner on the inter-allied Rhineland High Commission. Until 1927 he was known as Lord Kilmarnock, one of the minor titles of the Earldom of Erroll, in which he succeeded his father in the year named. He was the head of the historic Scottish family of Hay, and twenty-fourth hereditary lord high constable of Scotland, as well as knight marischal of that kingdom. He wrote a book, *Ferelith* (1903) and two plays, *The Dream Kiss* (1924) and *The Anonymous Letter* (1927).

ERYSIPELAS. The serum treatment of this disease which was first reported by Birkhaug of Rochester, N. Y. in 1926 was the subject of a paper by Dr. Wm. S. McCann of the same city in the *Journal of the American Medical Association*. The earliest report dealt with 60 cases in which the results as to length of sojourn in hospital were very favorable. Subsequent experience, however, was disappointing, and comparison of the new serum with ordinary scarlet fever antitoxin seems to show that the latter was equally efficacious. Analysis of the cases of erysipelas treated at the same clinic in long past years shows low mortalities and short average sojourn in hospital which had not been improved under the new serum. The author is not wholly a pessimist and defers judgment until the serum has been fully tested on types of cases which have a bad prognosis. On the other hand, Dr. Symmers of Bellevue Hospital, New York (same journal, August 25), who has tested the new serum—which actually should be called an antitoxin—in hundreds of cases was most enthusiastic as to its efficacy and pronounced it a great advance, although the injections, contrary to what one would expect, confer no immunity against future attacks. Symmers by 1928 had treated over 700 cases. The mortality was about 5 per cent for facial and 8.4 per cent for corporeal erysipelas—figures quite superior to those of pre-serum days; while sojourn in the hospital showed much curtailment.

ESCHWEGITE. See **CHEMISTRY**, under *Mineralogical Chemistry*.

ESKIMOS. See **ANTHROPOLOGY**, under *New World Ethnography*.

ESSAYS. See **LITERATURE**, **ENGLISH AND AMERICAN**; **FRENCH LITERATURE**; **GERMAN LITERATURE**; **ETC.**

ESTONIA. A Baltic State comprising the following portions of the former Russian Empire: The Province of Estonia, the islands of Moon Sound, the northern part of Livonia, part of the northwestern section of the district of the Pskov government, and a small portion of the Petrograd government; declared independent Feb. 24, 1918, and recognized by the League of Nations, Jan. 26, 1921. Capital, Tallinn (Reval).

AREA AND POPULATION. The total area is about 18,354 square miles; population, at the census of 1922, 1,110,538, of whom 92 per cent was Estonian, 1.5 per cent German, and 6.5 per cent Russian and other nationalities. Five-sixths of

the population are Lutheran, and the rest Greek Orthodox, Roman Catholic, etc. The population on Jan. 1, 1926 was estimated at 1,117,270. Tallinn or Reval, the capital, had a population of 127,000 in 1926. Dorpat (Tartu), the seat of the university of the same name, had about 59,000 inhabitants. Other large towns are Narva, a manufacturing town, with about 27,000, and Parnu, on the Gulf of Riga, with about 27,000.

EDUCATION. Elementary education is free and compulsory. In 1925-26 there were 1356 elementary schools in the republic. Of this number 1304 were supported by local authorities and 52 were private schools. The number of middle schools for general education, gymnasiums, etc., was 81, of which 28 were private schools. For special or professional education there are five teachers' seminaries, three navigation schools, commercial schools, agricultural schools, and industrial and art schools. For higher education there are the University of Dorpat (founded in 1632) which had 4651 students in 1926 and the Technical Institute at Tallinn, with 484 students.

PRODUCTION. Agriculture and dairy farming are the chief pursuits of the people. The total area of about 10,851,648 acres is divided as follows: Forest land, 2,220,002 acres; fields, 2,532,799 acres; meadows, 2,602,274 acres; pastures, 1,836,402 acres; untillable land, 1,632,206 acres, including a peat bog of 496,122 acres. The acreage and yield of the principal crops in 1926 were: Rye, 336,330 acres, 114,055 tons; wheat, 59,104 acres, 23,919 tons; barley, 299,932 acres, 131,474 tons; potatoes, 171,814 acres, 925,896 tons; oats, 361,999 acres, 133,106 tons. In 1927 Estonia had 628,880 head of cattle, 665,510 sheep, 348,100 pigs, 224,820 horses, and 809,670 poultry. Over 10 per cent of the population finds occupation in the various industries of the country, the most important of which are textile, paper, cement, oil-shale, forestry, timber, match, flax, and leather industries.

COMMERCE. Foreign trade during 1927 was very active and was featured by a large expansion in exports which resulted in an increased export surplus. Estonia's imports, which were 6 per cent lower in volume than in 1926, were slightly higher in value, owing to a recovery of commodity prices during the year. Imports for 1927 were valued at 9,642,524,000 marks (\$25,882,000), as against 9,556,975,000 marks (\$25,485,000) in 1926. The imports of grain and flour, fish, fish products, paper, and paper products fell off; purchases of metals, machinery, cotton, fertilizers, chemicals, etc., gained considerably. The favorable trade balance was due to increased exports of dairy products, notably butter, and of potatoes, textile products, wood, and wood manufactures. Exports registered at 16 per cent increase in volume, and the more satisfactory price and market conditions for butter and flax during the year resulted in a 10 per cent value increase over 1926. Exports were valued at 10,577,572,000 marks (\$28,348,000), as compared with 9,623,603,000 marks (\$25,663,000) in 1926. The export surplus totaled 935,048,000 marks (\$2,526,000), as against a similar balance of 66,628,000 marks (\$178,000) in 1926.

FINANCE. Considerable progress in balancing the Estonian budget and stabilizing Estonian finances had been made in recent years, especially since 1922, the first year in which statistics for receipts showed a surplus over expenditures. In each of the subsequent years also there

has been a surplus of revenues over payments. Ordinary revenues are increasing and steadily approaching the point of meeting all types of expenditure. An outstanding development has been the advance in ordinary revenue, resulting from increased collections in established tax categories and from the establishment of new taxes. The budget for 1928-29 balanced at 8,026,661,000 Estonian marks, but it was confidently expected that when all the returns were in a surplus would be shown.

Estonia's national debt on Jan. 1, 1928, totaled 110,696,000 Estonian crowns (\$29,667,000), of which 110,049,000 crowns was foreign, and 647,000 crowns internal, indebtedness. As a result of the 7 per cent loan of 1927, guaranteed by the League of Nations, the debt on Jan. 1, 1928, was about \$7,700,000 greater than on Apr. 1, 1927. As the first official statement of the total debt in the new Estonian currency (see preceding YEAR BOOK) was made as of Jan. 1, 1928 (previous statements consisting only of the individual currencies in which the debt was contracted), no exact comparison with earlier periods is possible.

COMMUNICATIONS. During 1926, 2498 vessels of 724,168 tons entered and 2453 vessels of 725,442 tons cleared the ports of the Republic. Reval is the chief port. The merchant marine consists of 63 steamers of 28,468 tons, and 305 sailing vessels of 26,393 tons. The railways of Estonia are owned and operated by the State and at the beginning of 1926 comprised 674 kilometers of main standard-gauge line and 515 kilometers of narrow-gauge line.

GOVERNMENT. According to the constitution of the Estonian Republic, passed by the Constituent Assembly on June 15, 1920, and put into force December 20 of the same year, executive power is in the hands of a State head or "State Elder" and a ministry, both chosen by and responsible to the State Assembly; legislative power, in the hands of the State Assembly of 100 members elected for three years on the basis of proportional representation and by direct, universal, and secret suffrage. The Assembly forms the government and accepts its resignation, promulgates the laws, passes the budget, decides the financial policy generally, ratifies treaties, etc. The principle of the referendum is recognized for the proposal or amendment of the laws, but not in relation to measures affecting the budget, or war, peace, or foreign affairs. State Elder in 1928, J. Tõnisson, assumed office Dec. 9, 1927.

HISTORY. On Feb. 24, 1928, Estonia celebrated the tenth anniversary of her independence. Premier Tõnisson resigned in November and was succeeded by Rej, a Socialist, whose ministry received a vote of confidence on December 5. Its members were as follows: Kalbus, Radical, Justice and Interior; Lattik, Clerical, Foreign Affairs; Juhkam, Radical, War; Cinas, Socialist, Economics; Koester, New Peasant, Transportation; Johanson, Socialist, Welfare and Education; and Soonberg, New Peasant, Agriculture. In the beginning of December a commercial treaty with Germany was signed, but it was not ratified by the end of the year.

ETHER. See PHYSICS.

ETHIOPIA (formerly ABYSSINIA). A country in West Africa between the Anglo-Egyptian Sudan and the Red Sea comprising the Provinces of Harar, Equatorial Provinces, Gondar, Jinma, Wollo, Shoa, Sellale, Edjow, Wol-

laga, Guimira, Gojan, etc. The area has been variously estimated at from 350,000 to 430,000 square miles. The former figure is probably more nearly accurate. The most recent estimate of the population places it at about 10,000,000, although the Abyssinians, properly so called, number less than 3,500,000. They are Christians of Hamitic origin. The capital is Addis Abeba, with a population of from 60,000 to 70,000, of whom about 1000 are foreigners. The other chief city, Harar, has a population of about 40,000. Domestic slavery is a recognized institution, but slave trading, by an ancient law renewed by a decree issued in June, 1923, is punishable by death. In March, 1924, an edict was issued by Ras Taffari, providing for the gradual emancipation of slaves beginning with the children born of slaves.

HISTORY. On August 2 an important treaty was signed between Ethiopia and Italy. As noted in previous YEAR BOOKS, Italy and Great Britain had cast covetous eyes on the rich natural resources of the African territory of Ethiopia. The Ethiopian Government protested to the League of Nations, whereupon both countries involved stated that they had no desire or intention to interfere with the sovereignty of the country. Great Britain's interest dealt primarily with the headwaters of the Nile. It appeared from subsequent events that Italy outmaneuvered Great Britain as far as Ethiopia was concerned. The treaty between Italy and Ethiopia was a general one of friendship and arbitration, but contained a further agreement concerning the building of railroads, etc., which are described above.

The character of Ethiopia's import trade indicates that the native people in their present stage of economic development are incapable of producing even their bare necessities. The exported products, moreover, are only those of a pastoral and crudely agricultural country. For example, much of the coffee is wild. Hides and skins are the casual by-products of animals raised primarily for food, and would be wasted for the most part if there did not happen to be a foreign demand for them. Wax is gathered from wild honeycombs and ivory is obtained from wild animals killed mainly for that valuable material. Grain, of course, is cultivated, but in a primitive manner. Other agricultural products include potatoes, beans, and other vegetables. Civet production might properly be called an industry, since it is achieved by organizing breeding farms of civet cats. Gums, such as gum arabic, gum tragacanth, and myrrh, are obtained by the usual simple process of tapping the trees of the countryside. Ethiopia cannot, therefore, be called an industrial country, except in the most strictly limited sense of the word, despite its reputation for having potentialities of such an amazing extent that it might well become one of the most productive countries in the world.

No reliable figures for exports and imports are available, but, according to a British authority, they reach £2,500,000 annually. The chief exports are surpluses of the products mentioned above and the chief imports are cotton shirtings, cotton goods, liquors, railway materials, provisions, sugar, petroleum, and salt. The principal line of trade is along the French-Ethiopian Railway, but there is a considerable caravan trade in the interior. The imports come mainly from the United States, Great Britain, France, India, Italy, and Japan. The French-Ethiopian Railway connects Djibuti in French Somaliland with Ad-

dis Abeba, a distance of about 495 miles. Over this road two trains a week are run in each direction. In 1925 the owners of the road made a sweeping increase of 30 per cent in freight rates, the rates being payable on a gold basis. It was expected that this would defeat its own purpose, because the charges became so high that they were prohibitive. For many years Ethiopia has been seeking an outlet of its own to the sea, and it was announced late in 1928 that Italy would lease to that country for 130 years a piece of land in or near the port of Assab in Eritrea where a wharf, pier, or jetty could be built. The Ethiopian Government was to have complete control of the land so leased and would collect taxes on imports and exports without interference from the Italian authorities. Italy promised to build a road suitable for motor transport from Assab to the Ethiopian frontier and Ethiopia was to continue the road to Dessie. It was hoped that ultimately the road would be extended to Addis Abeba.

The government of Abyssinia is practically feudal in character, although a shadowy form of cabinet government was introduced. In October, 1928, the Prince Regent of Ethiopia, Ras Tafari Makonnen, was crowned King, after twelve years of regency. He became Regent after the incompetent Yasu was dethroned in 1916; at the same time Zauditu, a daughter of Menelik was crowned Empress. The revolution of 1916 was probably fomented by the ecclesiastical authorities, who felt that another Moslem attack on the Christian faith of Ethiopia was about to begin. Yasu himself had become a Moslem and wished to help Turkey in the war. Reports had been rife that the Empress and the Regent had not gotten along together very well, rumors stating that the Empress was reactionary and under the control of the clergy, while Ras Tafari was a progressive and strongly in favor of Western ideas and methods.

ETHNOGRAPHY. See **ANTHROPOLOGY**.

ETHNOLOGY. See **ANTHROPOLOGY**; **PHILOLOGY**, **MODERN**.

ETRUSCAN ANTIQUITIES. See **ARCHAEOLOGY**.

EUCHARISTIC CONGRESS. See **ROMAN CATHOLIC CHURCH**.

EUROPEAN CORN BORER. See **CORN**; **ENTOMOLOGY**, **ECONOMIC**.

EVANGELICAL CHURCH. A denomination formed by the Union of the Evangelical Association and the United Evangelical Church. The former was the outgrowth of a religious movement started in Pennsylvania in 1800 by the followers of Jacob Albright. In 1892 a number of ministers and members organized themselves into the separate denomination known as the United Evangelical Church. At length the growing conviction that the two churches should be reunited led to the appointment of commissions, which drew up the so-called Enabling Act. The new organization was officially established at Detroit, in 1922. At the time of merging, the Evangelical Association had 167,416 church members and the United Evangelical Church 92,001. At the end of 1928, there was a total membership of 258,214. There were 1972 itinerant preachers and 475 local preachers. Of the 27,626 received into church membership during the year, 15,764 came on profession of faith. Sunday schools numbered 2849, of which 710 were in the foreign mission fields in China, Japan, Germany, and Switzer-

land. Of the total enrollment of 372,943, China had 4070; Japan, 3717; Europe 42,774. The total amount raised by the Sunday schools was \$518,194. The Christian Endeavor Society membership was 74,467. There were 1458 Woman's Missionary Societies in the denomination, with a membership of 42,047. The total value of all property was \$39,682,707. The money raised during the year totaled \$7,040,800, an average of \$27.31 per member. The chief schools of the denomination were: North Central College and Evangelical School of Theology, Naperville, Ill.; Western Union College, Le Mars, Iowa; Albright College, Myerstown, Pa.; Schuykill College and School of Theology, Reading, Pa. Two orphanages and six old people's homes were maintained in the United States, as well as several hospitals. The church had twenty-four conferences in the United States, two in Canada, one in Japan, two in Germany, and one in Switzerland. There were two publishing houses, one in Cleveland, Ohio, and the other in Harrisburg, Pa. The Church issues two official papers, the *Evangelical Messenger*, in English, and *Christliche Botschafter*, in German. It was planned to hold the next general conference in Milwaukee, Wis., in October, 1930.

EVANGELICAL SYNOD OF NORTH AMERICA. THE. A religious communion strictly evangelical in principle as historically crystallized from the Reformation of the sixteenth century and as embodied in the Reformed and Lutheran doctrinal statements, accepting these statements as far as they agree. When they disagree, however, the Evangelical Synod adheres strictly to the passages of Holy Scripture bearing on the subject and avails itself of the liberty of conscience prevailing in the Evangelical Church. The communion was organized in 1840 at Gravois Settlement, Missouri, and consolidated in 1877 with similar communions. The church is organized in 19 districts with extensive power of self-government. Presidents of districts, clerical delegates, and lay delegates meet in General Conference every fourth year. A quadrennial Conference was held in 1925 and an Extraordinary General Conference adopting a new constitution in 1927, when the organization included 1197 pastors, 1267 congregations with 350,156 communicant members, and 1250 Sunday schools with 190,261 members. Money raised by the denomination for all purposes in 1927 amounted to \$6,702,967. Church property was valued at \$38,463,860. Missionary work was carried on in the United States, India, and Honduras. In the United States there were over 100 missionaries, men and women, active in about 135 communities. The Board of Foreign Missions reported an income of over \$171,522 for 1927 and had 14 men, two of them medical workers, and 18 women, as missionaries in India, in addition to 333 native workers. In Honduras there were 11 missionaries at two stations. The denomination maintains four institutions of learning: Eden Theological Seminary, St. Louis, Mo.; Elmhurst College, Elmhurst, Ill.; Robinson Academy, Waco, Texas; and Oakwood Institute, Cincinnati, Ohio. The chief periodicals published are *Der Friedensbote*, *The Evangelical Herald*, and *The Light Bearer*.

EVERSLEY, FIRST BARON, OF OLD FORD (GEORGE JOHN SHAW-LEFEVRE). English lawyer and statesman, died at Winchester, England, April 19. He was born June 12, 1831. He was educated at Eton and at Trinity College, Cambridge, and was called to the bar in 1855. He was

a member of Parliament for Reading from 1863 until 1885 and then for ten years represented Central Bradford. In 1868 he carried through the vote in the House of Commons for arbitration of the Alabama Claims of the United States against the British Government. He was secretary of the Board of Trade under John Bright (1869-71), under secretary in the Home Office (1871), and postmaster general (1883-84). In 1881-83 he was first commissioner of works, and this office he held again in 1892-93, with a seat in Gladstone's cabinet. Then for about a year he served as president of the local government board. While in the House of Commons he was chairman of many important committees and commissions. From 1897 he was a member of the London County Council, and in 1906 he was raised to the peerage as the first Baron Eversley of Old Ford. He wrote: *Freedom of Land* (1880); *English and Irish Land Question* (1881); *Peel and O'Connell* (1887); *Incidents of Coercion* (1888); *Agrarian Tenures* (1893); *Commons, Forests, and Footpaths* (rev. ed., 1910); *Gladstone and Ireland* (1912); *The Partitions of Poland* (1915); *The Turkish Empire, Its Growth and Decay* (1917).

EVOLUTION. See ARKANSAS; TENNESSEE; ZOOLOGY.

EXCAVATIONS. See ARCHÆOLOGY.

EXCHANGE, FOREIGN. See FINANCIAL REVIEW.

EXHIBITIONS, ART. See ART EXHIBITIONS.

EXPERIMENTAL PSYCHOLOGY. See PSYCHOLOGY.

EXPERIMENT STATIONS. See AGRICULTURAL EXPERIMENT STATIONS.

EXPLORATION. Modern exploration has two phases; that which is concerned with the reconnaissance of hitherto unknown areas and that which deals with detailed studies in known regions. In 1928, the majority of the expeditions were of the second type. The following list of expeditions is far from complete since it covers only the more general and more significant researches of the year. Archaeological and Anthropological investigations are described under their separate headings and expeditions in the Polar Regions are treated under POLAR RESEARCH.

NORTH AMERICA. Professor Jaggar led a seismological expedition to the Aleutian Islands (see GEOGRAPHIC SOCIETY, NATIONAL). S. R. Capps continued his mapping activities in south central Alaska. Captain Perfilieff made a study of wild life and northern scenery in northern Canada for the Academy of Natural Sciences of Philadelphia. W. B. Hoare took a census of wild life in the Great Slave Lake area for the Government of the Northwest Territories. Ice-breakers, freighters, and planes completed an 18-month survey of the practicability of Hudson Bay and Strait as an outlet for the new grain railway to Churchill. S. H. Chubb of the American Museum of Natural History made a photographic study of the bird life on Bonaventure Island in the Gulf of St. Lawrence. There was considerable activity by government geologists in prospecting for and checking new mineral fields, particularly in Ontario and Quebec. The Austin Ornithological Expedition had a successful summer in Labrador collecting and banding birds. In the United States, field work was largely archaeological or geological. In geology the State surveys, the United States Geological Survey, and the colleges provided most of the

investigators. Archaeological discoveries were particularly intensive in the southwestern States.

CENTRAL AMERICA. Here, there was a continuation of the extensive study of the archaeology not only of Mexico and Yucatan but of the entire region as well. The Yale School of Forestry, the New York Botanical Garden, the Field Museum, and the United Fruit Co. were coöperating in a study of forest conditions throughout the area. Paul G. Standley of the Smithsonian Institution made botanical studies in Honduras and Dr. and Mrs. N. L. Britton continued the botanical survey of Porto Rico which the New York Academy of Sciences had been conducting. A research station on Barro Colorado Island in Gatun Lake which was sponsored by the National Research Council was the scene of ornithological work by Frank Chapman of the American Museum of Natural History and of botanical work under L. A. Kenoyer. In the West Indies, and particularly in the Bahamas, studies on sedimentation were carried out by Dr. Flint of Princeton, Dr. Fish of the Rochester Museum, and William Beebe. Dr. Meinesz continued his study of world gravity in a submarine in the Caribbean and the Gulf of Mexico.

SOUTH AMERICA. The Dickey-Pathé Ethnological Expedition to the border regions of Brazil and Venezuela returned in the spring after a successful visit to some unknown tribes. Dr. and Mrs. Dickey again set out under the auspices of the Museum of the American Indian to study the Piarroas Indians on the Orinoco. E. G. Holt collected birds in Venezuela for the Carnegie Institution of Washington and also for the National Geographic Society. Under the auspices of the American Museum of Natural History, Mr. Tate led the Taylor Duida Ethnological Expedition to Venezuela and the Lee Garnett Day Expedition collected birds and mammals on Mt. Roraima. In Dutch Guiana, Drs. Kahn and Herskovits and Myron Granger made a survey of the Bush Negro—Dinka—for the American Museum of Natural History. J. H. Sinclair returned from mapping in Ecuador, and O. M. Miller completed a survey of the headwaters of the Marañon River—both expeditions being under the American Geographical Society.

The Geographic Society of Paris and the Paris Museum of Natural History organized an expedition which was to spend two years in the interior of Peru. In Matto Grosso, G. M. Dyott conducted a search for Colonel Fawcett, an English explorer whose long absence had aroused apprehension. No trace of him was found and the conclusion was that he had been killed by the natives. A group of German and Austrian Alpinists headed by Drs. Pfann and Troll had been climbing in the Andes. An Italian expedition from Geneva under Professor Battelli was studying the ethnology, flora, and fauna of the Amazon Basin. The Paris Canoe Club, the Geographic Society of Paris and the Natural History Museum of Paris were sponsoring an expedition up the Amazon River by canoe.

AFRICA. Exploration in the Sahara was actively pursued by the French military missions who were accomplishing much valuable reconnaissance work. The Augieras-Draper Expedition from the Paris Geographical Society had been two years in the Sahara. Seven members of the faculty of the University of Algiers made an intensive study of the Hoggar. The Wulsin-Putnam Expedition from the Peabody Museum

enquired into the ethnology of the western Sahara. In North Africa, the French National Museum sent M. Thomas to study the Troglodytes of Tunisia; Dr. Borchardt pursued his search for the "Lost Atlantis"; and Dr. Collie of the Logan Museum at Beloit sought for traces of ancient man in Algeria. In West Africa, Lady Dorothy Mills had undertaken a study of witchcraft practices. The Harold White-John Coats Abyssinian Expedition of the Field Museum was also active. The Duke of Abruzzi has reported the discovery of the source of the Webi Shebeli (River) in Italian Somaliland.

In East Africa, L. S. Leaky led an ethnological expedition for the British Museum. Two experts from the U. S. Department of Agriculture collected forage plants. For the American Museum of Natural History, the Carlisle-Clark Expedition gathered material for animal groups and Rockefeller and Murphy collected birds in Tanganyika and the Belgian Congo. Martin Johnson continued filming East African wild life. The Chicago Geographic Society sponsored an expedition to Mt. Ruwenzori under Carveth Wells. In Central and South Africa, Professor Cooley of Montana sought a parasite for the American wood tick. An aerial survey of the headwaters of the Zambezi River was in process of completion. Professor Frobenius began a survey of South African archaeology. From Denver, the Cameron-Cadle Expedition to the Kalahari commenced the search for stone-age man.

ASIA. Asia Minor was the scene of a great number of archaeological investigations. F. G. Clapp made a geological trip to Persia. M. J. Barthoux has been to Afghanistan and Sir Aurel Stein continued his travels in Central Asia and Baluchistan. The Roerich Expedition of 1927-28 which traveled through northern India, Turkestan, and central Asia collected literature and made paintings of the country. The Duke of Spoleto headed an Italian expedition seeking a new Karakorum pass into Turkestan. The German-Russian Expedition to the Pamirs has mapped much unknown country. V. N. Borovik headed a folklore expedition of the Russian State Academy of Art to the Ural-Altai country. Under Sten Bergman a Swedish group has been studying the geology and ethnology of northwest Siberia. Prof. Kulik led a Soviet expedition to the site of the world's largest meteor in northeast Siberia. In Mongolia, R. C. Andrews completed another successful collecting expedition for the American Museum of Natural History. George Cressy of Shanghai College was also doing paleontological work in Mongolia. Kosloff was investigating the headwaters of the Yangtze-kiang River. Sven Hedin returned from an expedition to the Gobi Desert and immediately started back. Dr. Trinkler of the Bremen Museum was investigating a buried city in Chinese Turkestan.

The Filchner Expedition which had started to complete the Russo-Chinese magnetic surveys and which had been given up as lost, returned from Lhasa after many narrow escapes. The Roosevelts commenced an expedition to northern Siam and China to collect big game for the Field Museum. They were to be joined by another collecting group from the same museum. J. Rock returned from a stay among the Lamas of Choni in northwestern China. In Kwang Si, Dr. Li has acted as collector for the Smithsonian Institution and the Freer Gallery in connection

with an extensive Chinese Expedition. The Fauntleroy-Vernay Expedition from the American Museum of Natural History gathered mammals in India and Burma. A German archaeological expedition under Dr. Eickstedt was making extensive studies both in India and the Andaman Islands.

AUSTRALIA. Mr. and Mrs. Blanchard of the University of Michigan were making a survey of the fauna and flora of Australasia. The Rockefeller Foundation coöperated with the University of Adelaide in an ethnological survey of Australia. Dr. Basedow explored the Northern Territory. The Great Barrier Reef Expedition made a thorough study of this most extensive coral formation with a view to determining its economic importance.

OCEANIA. The Whitney Expedition to the South Seas collected for the American Museum of Natural History. The German Sunda Expedition under Rensch and Mertens made an archaeological survey of the Malay Archipelago. Ex-Governor Pinchot was carrying two scientists with him on his South Seas cruise. The Crane-Field Museum Expedition was collecting fishes. The Netherlands Meteorological Institute conducted a vulcanological survey of Oceania. Representatives of the U. S. Department of Agriculture sought a disease-resistant sugar cane in New Guinea. Lee Crandall of the New York Zoological Gardens collected birds in New Guinea. Dr. Crampton of the Carnegie Institution of Washington was studying the evolution of land organisms in the Pacific Islands.

OCEANS. The non-magnetic yacht, *Carnegie*, of the Carnegie Institution of Washington commenced another voyage around the world. The Danish ship, *Dana*, was pursuing oceanographic studies on a world cruise. Professor Schmidt studied the relation between eels in the Atlantic and Pacific oceans. A group of Yale students collected birds and fish for the Peabody Museum. The 1928-29 world cruise of the Vanderbilts is for the purpose of collecting sea life. O. Holte-dahl, attached to the *Norvegia* Expedition, made extensive studies on the islands to the north of Graham Land in the Antarctic.

EXPLOSIVES. See CHEMISTRY, INDUSTRIAL; MILITARY PROGRESS.

EXPOSITIONS. No international exposition of importance was held during the year, neither in the United States nor Europe.

IBERO-AMERICAN EXPOSITION. A full description of this exposition planned to be held at Seville, Spain, will be found in the YEAR BOOK for 1927 (p. 280), where it was announced that the opening would occur Oct. 12, 1928. Early in the year it was found that owing to the impossibility of completing certain national pavilions in course of erection by American governments, the opening was again postponed until Mar. 15, 1929. Argentina, Brazil, Bolivia, Chile, Colombia, Cuba, Ecuador, Mexico, Paraguay, Peru, United States, and Uruguay were among the American nations that were erecting permanent buildings. There were to be three buildings, the designs for which were made by William T. Johnson of San Diego, Calif., erected by the United States, the principal one of which in the Spanish Colonial style of architecture was to be permanent, and at the close of the Exposition was to become the U. S. Consulate in Seville. Announcement was made that one of the attractions would be a replica of Columbus' famous caravel, *Santa*

Maria, which was to be constructed. A voyage will be made from Cadiz to Seville in the caravel when the officers and crew will wear exact reproductions of the dress worn at the time when Columbus set out on his trip across the Atlantic. Also the commands will be shouted in the language of the epoch. As American commissioner, Thomas E. Campbell of Arizona was appointed.

BARCELONA INTERNATIONAL EXPOSITION. A second exposition was announced by Spain for 1929, which was to be held in Barcelona from May 1 to December 31. The site chosen for this exposition is the Montjuich Park on the outskirts of the city. It was to cover nearly 300 acres and include some beautiful gardens. The structures comprised 4 permanent buildings, the National Palace, the Palace of Building Arts, the Palace of Temporary Exhibits, the Press Building, and a stadium for athletic events; also 11 temporary buildings, of which 8—the Palaces of Agriculture, Textile and Allied Industries, Electricity and Motive Power, the Theatre, Labor, Sports Equipment, Modern Arts, and Graphic Arts—were entirely or nearly completed at the end of the year. The exhibition was to have three main divisions—industrial and commercial, artistic and historical, and athletic and sporting. The Industrial Division would include exhibits of the industrial and agricultural products of all countries, together with the works of the sciences and social organizations having a direct connection with those industries. These exhibits were to be classified as (1) Motive power, machinery, and equipment; (2) Machines, tools, equipment, and supplies; (3) Organization of labor, professional direction, hygiene, and safety; (4) Agriculture and livestock; (5) Mining; (6) Textile and allied industries; (7) Building and construction, city planning, and public works; (8) Industrial arts; (9) Engraving and printing; (10) Scientific and artistic instruments; (11) Communications and transportation; and (12) Chemical industries.

Particular attention was to be given to all things pertaining to light, such as electric lighting, light and power equipment and apparatus, by-products and sources, and the influence of light on industrial and human activity. The Division of Art and History was to stress Spain, showing its development from earliest history to the present, with the influence and results of foreign contact on the Spanish race and culture clearly indicated as told in historic treasures belonging to the State, the Church, public associations, and private citizens. Life in typical Spain and an exhibition of contemporary art was to be included. The Athletic Division would embody all types of games and sports including apparatus, accessories, and costumes. One of the features was to be the national and international sports events scheduled to take place during the life of the exposition.

FUTURE EXPOSITIONS: CHICAGO. Definite plans were progressing toward the organization of a World's Fair to celebrate the centennial of the founding of Chicago in 1833. It was expected that at least \$30,000,000 would be required to finance the undertaking and it was proposed to underwrite the cost by selling certificates entitling purchasers to 10 admissions. It was recommended to build five islands in Lake Michigan on which permanent fair buildings could be constructed for the exhibit. One island would be in the shape of the United States and another

island would depict Chicago as it was in 1833. It was suggested that the various State buildings be placed in their respective positions on the "United States Island."

One of the new and unique features announced for this exposition was a historic development of the dance under Adolph Bohm to include art, folk, and stage dancing. Announcement also was made that a great parliament of religions, to be attended by clergymen and lay workers from all parts of the world, would be a feature of the part that churches would play in the Chicago World's Fair Centennial Celebration to be held in 1933. Rufus C. Dawes was the president of the World's Fair Committee; Charles S. Peterson, vice president; George Woodruff, treasurer; the secretary was Daniel H. Burnham, originator of the Chicago Plan, and the board of directors comprised sixty of the city's business leaders, including D. F. Kelly, Edwin N. Hurley, B. E. Sunny, and Samuel Insull.

NEW YORK. Plans for an international exposition of arts, industries, manufactures, and products of the soil, mine, and sea and to celebrate the 200th anniversary of the birth of George Washington had progressed to the formation of an organizing committee with Joseph P. Brown as secretary, and executive offices at 154 Nassau Street. The proposed site comprised 2000 acres of city-owned land at the extreme south end of Flatlands on Jamaica Bay, and the purpose was to make a permanent marine park as well as to afford a permanent exposition for all nations. It was indicated that the site would be ideal for an airport. The plan involves the completion of the digging of a 30-foot channel by the Government in front of the proposed site to permit largest vessels and navies of the world to anchor off the exposition grounds. Construction of buildings with exhibition space for the display of goods manufactured in the United States was expected to total approximately 5,000,000 square feet of space, exclusive of special buildings built by trades and manufactures for their own products. There was to be the largest amusement park in the world including bathing pavilion. Pavilions for exhibits by United States Government departments, as well as pavilions for 46 foreign governments, and Porto Rico, Alaska, the Philippines and Hawaii, also were planned and a stadium to accommodate 200,000 people, the largest in the world. A large tower with 200 arc lights which will flood the sky with light for a radius of many miles was another feature. Parking space for 100,000 automobiles; a one-mile water course for regattas, swimming races, and all kinds of water sports; four miles of bathing beach, considered as fine as any beach adjacent to New York City, were also contemplated. The estimated cost of constructing and laying out of the exposition, including the foreign and State pavilions, was placed at approximately \$100,000,000. In August, the Hon. Grover Whalen was elected chairman of the organizing committee.

BELGIUM. No detailed information had been received beyond the fact that in 1930 Belgium plans to commemorate the hundredth anniversary of its independence as a nation by an international exposition held jointly at Antwerp, Liège, and Brussels. The Antwerp exposition was to be devoted to the colonies, shipping, transport as applied to commerce, and the Flemish art to 1830. The exposition at Liège was to be confined to the iron and steel industries and to the sciences,

while at Brussels an exhibition of Belgian art from 1830 would be held.

POLAND. Poland's celebration in 1929 of the tenth anniversary of its restoration of independence was to include a national exposition on a large scale. It was to be held in Posen between May and October. The exposition was to occupy 32 pavilions, divided into four main sections, including cultural and artistic, agricultural and industrial, social hygiene, physical education and sports, and emigration. A fund of \$2,000,000 was being raised for the purpose.

SYDNEY. It was proposed to hold an exhibition in Sydney, Australia, from May to November, 1931. A site which lies in the northeastern part of Centennial Park, a large public recreation ground at Sydney, was selected, and was to be in the hands of the commission of control created to carry out the plans. The exhibition was to be strictly Australian in character, but participation was to be on an Empire-wide scale.

TRADE FAIRS. Lyons. The usual spring fair was held in Lyons, France, during March 5-18, and the results showed that the 1928 fair was successful from nearly all points of view and that it marked progress over the fair of 1927. According to the statistics, more than 360,000 visitors entered the main building. The number of foreign buyers was 12 per cent greater than a year before. The total number of exhibitors increased slightly to 3362, and more than 1000 requests for stands were refused because of the lack of space. Foreign countries having the largest numbers of exhibitors were: Germany, United States, Switzerland, England, Belgium, and Italy. Japan for the first time took an official part in the fair, more than 100 exhibitors participating in the group organized by the Japanese. The principal American products shown included machine tools, textile machinery, time-recording apparatus, electrical tractors, shoe manufacturing and repairing machinery, automobiles, agricultural tractors, and harvesting and cultivating apparatus. The general volume of business was 30 per cent higher. The groups registering the best sales results were metal manufactures, particularly elevators, machine tools, motors, textile, and printing machinery; furs and skins; furniture, and foodstuffs. There were good sales of electrical apparatus, hosiery, toys, and ceramics, but other groups were generally less successful.

Leipzig. The usual spring fair was held in Leipzig during March 4-14. More than 10,000 exhibits were made of which fifty represented American firms as compared with eight in 1927. Much interest was shown in the textile branch of this year's spring fair. A total of 930 textile firms exhibited as compared with 813 in the spring and 891 in the autumn fair of 1927. The international aspect was reflected by a greater number of foreign exhibitors and buyers. England was the chief foreign exhibitor, showing particularly wool knit goods and hosiery. The Japanese exhibits of silk kimonos, pajamas, shirts, and similar articles, although quite popular, were considered too bright-colored. The exhibit of furs at the Russian building was well attended and some beautiful pelts were shown. The turnover of toys, glassware, and porcelain was satisfactory, showing an increased demand for German goods.

The autumn fair was held during August 26-September 1. Reports show that there were about 10,000 exhibits from 18 countries on display

for buyers from both hemispheres, and that there was promise that the million marks' worth of trade done at the spring fair, half of which was export, would be exceeded by the autumn fair. A feature of the fair was the prominence given all branches of house building and home equipment in expectation of a home-building boom in 1929, expected because of the excellent crops this year. Textiles, toys, and chinaware were among other features of the show.

According to *Commerce Reports* (November 19, p. 483), "Porcelain in every home" was the slogan of the porcelain trades at the Leipzig Fall Fair. In order to stimulate public interest in porcelain, a tower was built on the market place in the centre of the city employing over 12,000 teacups. A large Christmas tree near the tower decorated with ornamental stars made from porcelain was likewise intended to attract the public.

According to the reports from the great Russian fair held in Nijni-Novgorod during August, business which started slowly this year was enlivened by the arrival of a large number of Persian traders and the exchange registered 600 transactions for a total of 44,000,000 rubles, a larger turnover than last year. Nine hundred firms were represented, two-thirds of which were wholesalers. About 400 of these were state or co-operative, eight concessionaires or mixed companies, 109 private; and 100 foreign. The foreign concerns were chiefly Persian, with a few Chinese and Mongolian. A feature of this year's fair was an All-Union exposition of handicraft from 42 producing regions of Russia.

EXTENSION WORK. See AGRICULTURAL EXTENSION WORK.

EXTENSION WORK IN AGRICULTURE. See AGRICULTURAL EXTENSION WORK.

EYRE, AR, LINCOLN. American newspaper correspondent, died at Berlin, September 10. He was born at Philadelphia, Pa., June 4, 1889, and after being graduated from the Taft School, Watertown, Conn., he traveled in Europe for a year before starting as a reporter on the New York Press. He was working for the New York Tribune in London when the World War started in 1914, and he then secured a place as war correspondent for the *World*, being under fire in the Western front much of the time. After covering the Peace Conference for the *World* in 1918, he transferred to the New York Herald, becoming a popular correspondent in Berlin. When the *Herald* and the *Tribune* were merged in 1923, Mr. Eyre, who was in close touch with the German Foreign Office, remained in Berlin, but changed to the staff of the New York Sun, and two years later joined the New York Times.

FAILURES. See BANKS AND BANKING; BUSINESS REVIEW; FINANCIAL REVIEW.

FAIRS. See EXPOSITIONS.

FALCON ISLAND. Located in the southwestern part of the Tonga or Friendly Islands in the South Pacific (Lat. 20° 19' S.; Long. 175° 25' W.) this island had appeared for the third known time. The eruption of October, 1927, caused the emergence of a volcanic crater which, in May, 1928, had a maximum diameter of about two miles and a height of 365 feet. Named for H.M.S. *Falcon*, which visited the spot in 1865 and reported a shoal, the island had attained an elevation of 290 feet by 1885. So quickly did it disintegrate that by 1898 it had practically disappeared. Two years later it was 10

feet high, but in 1913 a shoal was again reported. The eruption of 1927 was the most violent one on record. Explanation lies in the fact that this island is the top of an active volcano which, at times, erupts large quantities of easily eroded lava and pumice.

FAULKLAND ISLANDS. A colony of the British Crown, situated in the South Atlantic, 300 miles east of Magellan's Strait, consisting of: East Falkland, 2580 square miles; West Falkland, 2038 square miles; including in each case various adjacent small islands, about 100 in number. In addition to these are South Georgia, with an estimated area of 1000 square miles, and other dependencies including the South Shetlands, the South Orkneys, the Sandwich group, and Graham's Land, together with all unknown seas and lands of the Antarctic Ocean extending as far as the South Pole. The estimated population in 1926 was 2271. In 1926 the birth rate was 25.98 per thousand and the death rate, 14.09. The chief town is Stanley, with 950 inhabitants in 1926. Education is compulsory. Sheep raising is the chief industry, although whaling is carried on with some success. In 1926 the imports were valued at £709,246 and the exports at £4,400,701. The chief imports were groceries, coal and coke, hardware and machinery; the chief exports, wool and whale produce. The revenue in 1926 was £281,357 and the expenditure, £156,054. Governor in 1928, Arnold W. Hodson.

FALL RIVER. See MUNICIPAL GOVERNMENT.

FALL RIVER CONFLAGRATION. See FIRE PROTECTION.

FARM ACTIVITIES. See AGRICULTURE; AGRICULTURAL EXTENSION WORK; AGRICULTURAL LEGISLATION; AGRICULTURE, UNITED STATES DEPARTMENT OF; COÖPERATION; ETC.

FARM BOARD. See AGRICULTURE; AGRICULTURAL LEGISLATION.

FARM BUREAUS, FARM DEMONSTRATIONS, ETC. See AGRICULTURAL EXTENSION WORK.

FARMERS' INSTITUTES. See AGRICULTURAL EXTENSION WORK.

FARM LAND BANKS. See FINANCIAL REVIEW.

FARMS, FARMING. See AGRICULTURE.

FASCISM. See ITALY.

FAYOLLE, fā'ō'lē, MARIE EMILE. French general, died August 27, at Paris. He was born at Puy on May 14, 1852. He was educated at the École Polytechnique, where he specialized in artillery. Entering the army he advanced in rank until he had become brigadier general in 1910. At the opening of the World War in 1914, he had retired, but he was recalled to service, and put in command of the artillery brigade of Vincennes. Later in the year he was made commander of the Seventieth Division of Infantry. Early in 1915 he led the thirty-third Army Corps, and he fought at the head of the sixth French Army during the summer of that year. From February until July, 1916, he supported Pétain, who was then in charge of the armies at Verdun. Marshal Fayolle was also in active command in the Valley of the Somme between July, 1916, and March, 1917, and he was sent to Italy as commander of the French forces in the following November. He was made commander-in-chief of the allied armies including two American divisions between Soissons and the Château Thierry July, 1918, and directed the second battle of the Marne on the 18th of that month which broke Germany's military strength, and

precipitated the final defeat. After the Armistice Marshal Fayolle served from the autumn of 1919 until the autumn of 1920 as head of the commission on the German evacuation. He came to America in 1921, as a representative of General Foch, at the American Legion convention.

FEDERAL-AID ROADS. See ROADS AND PAVEMENTS.

FEDERAL CAPITAL TERRITORY. A territory of the Commonwealth of Australia, lying within the State of New South Wales. Area 940 square miles; population according to the census of 1921, 2572; estimated June 30, 1927, 7535. The bulk of the territory was acquired by the Commonwealth from New South Wales in 1911, as the site of the new capital, Canberra; 28 additional miles were obtained in 1917 as the site for a naval college. See AUSTRALIA.

FEDERAL COUNCIL OF THE CHURCHES OF CHRIST IN AMERICA. An organization established in 1908 by 28 Protestant denominations to act for them in matters of common interest. At the end of 1928 it included most of the Protestant denominations of the United States, as follows: Baptist Churches, North; National Baptist Convention; Free Baptist Churches; Christian Church; Churches of God in North America (General Eldership); Congregational Churches; Disciples of Christ; Evangelical Church; Evangelical Synod of North America; Friends; Methodist Episcopal Church; Methodist Episcopal Church, South; African Methodist Episcopal Church; African Methodist Episcopal Zion Church; Colored Methodist Episcopal Church in America; Methodist Protestant Church; Moravian Church; Presbyterian Church in the United States of America; Presbyterian Church in the United States (South); Primitive Methodist Church; National Council of the Protestant Episcopal Church; Reformed Church in America; Reformed Church in the United States; Reformed Episcopal Church; Seventh-Day Baptist Churches; United Brethren Church; United Presbyterian Church; United Lutheran Church (Consultative Body). Of these, all were full and official members with the exception of the United Lutheran Church, whose relationship was consultative, and the Protestant Episcopal Church, whose National Council coöperates in certain specified areas of work. The total number of local churches included in the constituency of the Federal Council, according to the Federal Census of the United States Government in 1926, was 136,076; number of clergymen, 116,644; total communicant membership, 22,010,312.

The Council, made up of members designated by the several denominations to act for them, meets quadrennially, the last meeting having been held at Rochester, N. Y., Dec. 5-11, 1928. It has an executive committee of about 100, meeting annually. An administrative committee, including at least one official representative from each of the denominations, meets monthly in New York. This committee includes representatives of other coöperative agencies carrying on specialized work for the churches, among them being the Home Missions Council; the Council of Women for Home Missions; the Council of the Church Boards of Education; the American Bible Society; the Student Volunteer Movement for Foreign Missions; and the International Council of Religious Education. The Council also serves as a connecting link between the church and great social agencies, such as the American Red

Cross, the Child Welfare Movement, and the U. S. Bureau of Public Health.

Special tasks of the Council are carried on by a group of commissions. The Commission on Evangelism develops a united approach to the evangelistic work of the churches. The Commission on the Church and Social Service is the centre through which the churches deal unitedly with social issues. It gives particular attention to the developing of better relations in industry through conferences. The Department of Research and Education issues a weekly information service discussing contemporary social questions from the standpoint of Christianity and makes special studies from time to time, its outstanding studies in 1928 being a report on the bituminous coal situation, and a study of the rural-urban conflict in the milk industry around Chicago. The Commission on Church and Race Relations furthers efforts of churches in promoting coöperation and good will between the white and Negro races in the United States. The Commission on International Justice and Good Will endeavors to mobilize the Christian forces to abolish war by building up effective international agencies for coöperation. During 1928 attention was given to supporting the proposal for renouncing war as an instrument of national policy. Other Commissions of the Council deal with the following subjects: Christian Education; Relations with Religious Bodies in Europe; Religious Work in the Canal Zone; Army and Navy Chaplains; Relations with the Eastern Churches.

One of the significant recent developments of 1927 was the initiation of the Church and Drama Association, organized for developing the coöperation of all religious forces in support of the worthiest productions on stage and screen.

The programme of the Council is carried on with funds contributed in part by individuals interested in the work and in part by appropriations from the various denominations. The official organ of the Council is the *Federal Council Bulletin*, issued monthly and furnishing general religious news. The officers elected for 1928-32 were: President, Bishop Francis J. McConnell, Pittsburgh, Pa.; Chairman of Executive Committee, Bishop John M. Moore of Dallas; Chairman of Washington Committee, Bishop William F. McDowell; Chairman of Western Committee, Dean Shailer Mathews. National offices are at 105 East 22d Street, New York. There is a Washington office in the Woodward Building, and a Western office at 77 West Washington Street, Chicago. General Secretaries at the national offices are the Rev. Charles S. Macfarland, the Rev. John M. Moore, and the Rev. Samuel McCrea Cavert.

FEDERAL RESERVE BANKS. See BANKS AND BANKING; FINANCIAL REVIEW.

FEDERATED MALAY STATES. A group of states, constituting a large part of the Malay Peninsula, under the protection of Great Britain, comprising: Perak, with an area of 7800 square miles; population in 1921, 590,055; capital, Taiping; Selangor, 3156 square miles; population, 1921, 401,009; capital, Kuala Lumpur, the largest city in the federation with a population of 80,000; Negri Sembilan, 2550 square miles; population, 1921, 178,762; capital, Seremban; Pahang, 14,000 square miles; population, 1921, 146,064; capital, Kuala Lipis. The total area is 27,506 square miles; with a population in 1921, of 1,324,890, comprising 510,821

Malays, 494,548 Chinese, 305,219 natives of India, 5686 Europeans, and 3204 Eurasians. The males greatly outnumber the females (853,528 to 471,362), which is due to the large number of Chinese and Indian immigrants. The estimated population in June, 1926, was 1,476,032. The movement of population in 1924 was: Births, 39,512; deaths, 33,585. In 1926 there were 46 English schools, with an average enrollment of 11,809 boys and 2946 girls. Vernacular schools under the control of the educational department numbered 1076 with an average enrollment of 56,087. There are in addition many vernacular schools for the Chinese not maintained by the Government.

Among the staple products are rice, coconuts, rubber, sugar, tapioca, pepper, gambier, and nipa palms. The main industries are the raising of rubber and the mining of tin. In addition to valuable timber, the forests produce resins, canes, gutta-percha, etc. Besides tin, gold is mined extensively; other minerals found but not worked in quantities are lead, iron, copper, manganese, silver, zinc, plumbago, mercury, arsenic, and scheelite. The labor force engaged in mining at the end of 1926 was 110,293. The imports in 1926 totaled £19,861,136 and the exports £51,937,399. The chief imports were rice, opium, tobacco, cigars, cigarettes, cotton piece goods, petroleum, and machinery; the chief exports, rubber, copra, and tin. In 1927 the rubber exports totaled 371,322 tons.

The revenue of the States in 1926 was £11,963,163 and the expenditure £10,227,437. The public debt on Dec. 31, 1926 was £9,355,000. All railroads in the Malay Peninsula south of Siam are operated by the Government of the Federated Malay States, which also owns all the lines except a stretch of 120 miles through the unfederated Malay State of Johore, which is leased from the Johore Government. The total mileage of this system at the close of 1927 amounted to 1200 miles of meter-gauge track, of which 753 miles were main line, 161, branch line, 166, sidings, and 120, leased line. The total freight traffic in 1927 amounted to 2,463,185 long tons, as compared with 2,259,005 tons in 1926. Railway operating revenues amounted to 20,697,540 Straits' dollars as compared with 19,622,027 in 1926. Other revenues derived from steamer services, ferry services, docks, etc., amounted to 2,317,975 dollars in 1927, as compared with 2,018,516 in 1926. Railway operating expenses in 1927 amounted to 17,295,602 dollars, and other expenses to 2,153,900 dollars, in comparison with 13,356,059 dollars and 1,857,041 dollars respectively. A large portion of the heavy expenditures for 1927 was necessitated by repairs to areas damaged by floods. These figures do not include capital expenditure in 1927 which amounted to 6,439,767 dollars, of which amount 3,538,574 dollars were expended for railway construction in the states of Kelantan and Pahang. This construction was still proceeding. The motive power and rolling stock in operation at the end of the year consisted of 206 locomotives, 4709 freight cars, and 387 passenger cars. During the year 8 locomotives, 56 freight cars, and 2 passenger cars were purchased. The general condition of the rolling stock was good.

The States are under British protection and the British Government is represented by the Governor of the Straits Settlements who is *ex-officio* high commissioner for the Federated

Malay States. High Commissioner in 1928, Sir Hugh Charles Clifford.

FEDERATION OF LABOR, AMERICAN. See LABOR, AMERICAN FEDERATION OF.

FENCING. The fencing competitions at the Olympic Games (q.v.) afforded the high lights of this sport in 1928, but the usual annual features in the United States also furnished keen rivalry. Lieut. George C. Calnan again won the national foils title and was placed second to Leo Nunes of the New York A.C. in the *épée* contest. Calnan added to his laurels by leading the Fencers Club to victory in the national foils, *épée* and three-weapon team championships. Nicholas Muray of the New York A.C. won the national sabres title.

Yale, Army, Columbia, and Princeton shared the honors in intercollegiate competition. Yale won the foils team title, with her Captain Every victorious for the second year in succession. Columbia took the sabres team championship, Norman C. Cohn of that university winning the individual sabres title. Tracy Jaesckel of Princeton defeated Thomas Sands of the U. S. Military Academy in a fence-off for the *épée* individual title, but Sands and John Hunrichs succeeded in retaining the *épée* team championship for the Army.

FERRATA, GIUSEPPE. An Italian pianist and composer, died in New Orleans, in April. He was born at Gradoli, Italy, Jan. 1, 1865. He studied in Rome under Sgambati, Terziani, and Leonardi and, as winner of a scholarship, had the fortune of becoming one of the last pupils of Liszt. From 1885-90 he made tours of Italy as a pianist. In 1892 he came to Pittsburgh as director of music at Beaver College. From 1909 until his death he was head of the piano department and professor of composition at Tulane University in New Orleans. An opera, *Il Fuorisito*, received honorable mention at one of the Sonzogno competitions, but was never performed. His other works include a symphonic poem, three string-quartets, pieces for orchestra, four masses, and numerous works for organ and for piano.

FERRIS, WOODBRIDGE NATHAN. American educator and public official, United States Senator from Michigan, died at Washington, D. C., March 23. He was born at Spencer, N. Y., Jan. 6, 1853, and was educated at the Oswego, N. Y., Normal and Training School and the medical department of the University of Michigan. He served as principal of a business college and academy at Freeport, Ill. (1875-76) and of a similar institution at Dixon, Ill. (1878-79), as professor at Rock River University, Dixon (1876-77), and as superintendent of schools at Pittsfield, Ill. (1879-84). Removing to Big Rapids, Mich., he founded (1884) and was thereafter president of the Ferris Institute. He was also president of the Big Rapids Savings Bank. After failing of election as Governor of Michigan on the Democratic ticket in 1904, he was elected in 1912 and again in 1914. In this office he aroused considerable criticism by his management of a strike situation in the Michigan copper mines. He was elected United States Senator for the term 1923-29. He was put forward as a Presidential candidate in the "preferential primaries" in his State in 1924, and was defeated by Henry Ford by a narrow margin.

FERTILIZERS. The fertilizer industry was being strongly influenced by the rapid develop-

ment in production of synthetic nitrogen compounds and of various concentrated forms of fertilizers. As stated in the *Report of the Chief of the Bureau of Chemistry and Soils* for 1928, "the present trend in fertilizer manufacture is toward the more concentrated mixtures which make possible substantial reductions in transportation, sacking, and handling costs. These fertilizers, in turn, call for more concentrated ingredients, fertilizer salts in which nitrogen, phosphoric acid, and potash are combined with the minimum of non-fertilizing elements." The average plant food content of mixed fertilizers produced in the United States was steadily rising and approached 17 to 18 per cent. One result of this was that, while the production of fertilizers in the United States had remained relatively stable at about 7,500,000 tons for several years, the actual plant food supplied by them had shown a marked increase.

Fertilizer consumption in the United States was far below the potential productive capacity of the factories, which was reported to be 12,000,000 tons of complete fertilizer per year. The United States was below European countries in the profitable use of fertilizers. It was estimated that nearly 6,000,000,000 pounds more of phosphoric acid, nitrogen, and potash were removed from the soil of the United States than was returned in the form of manures and fertilizers. The general introduction of more concentrated fertilizers by decreasing the cost of transportation and handling would no doubt have a powerful influence in increasing the use of fertilizers and the profitable production of crops.

The latest available figures indicated a slight decline in value of exports and a decided increase in imports of fertilizers by the United States in 1928, as compared with the previous year. Exports of rock phosphate remained quite stable, but exports of superphosphates showed a decided increase. Imports of phosphates showed a marked increase. Imports of nitrogenous fertilizers increased. Imports of both nitrate of soda and sulphate of ammonia increased. There was a decided increase in imports of synthetic nitrogen compounds and like products. Exports of sulphate of ammonia decreased. Imports of potash fertilizers increased. There was an increase in exports of fertilizer mixtures.

Of the world's production of pure nitrogen (about 1,250,000 metric tons) approximately 1,200,000 tons is used in agriculture. Since 1913 the consumption of nitrogen fertilizer per acre of cultivated land had increased 309 per cent in Denmark, 170 per cent in Japan, 108 per cent in Italy, 80 per cent in Germany, 67 per cent in the United States, 57 per cent in France, and 9.5 per cent in Great Britain, and this increase had been followed by profitable returns in crop production. This result had been made practicable by increased production of sulphate of ammonia and various forms of synthetic nitrogen compounds.

The world's production of sulphate of ammonia, both as a by-product and from synthetic sources, had increased steadily during recent years, but the output of the synthetic product had increased and was still increasing much more rapidly than that of the by-product and nearly equaled the latter. A large proportion of the world's supply of inorganic nitrogen was being derived from chemical fixation of the nitrogen of the air, and the possibilities in this direction

seem almost unlimited. This advance had been made mainly under private auspices and initiative. A bill providing for government ownership and operation of the Muscle Shoals plant for the production of power and nitrogen compounds passed the Seventieth Congress shortly before the end of its First Session, but did not receive the approval of the President, who had expressed objection to any disposition of the plant that would place the Government in the power or nitrate business.

There were no especially noteworthy developments in the phosphate industry during the year. The increased use of fluorine compounds as insecticides has called attention to the importance of the production of such compounds as a by-product of the phosphate industry, and study is being made of the possibilities in this direction. Progress was reported in the development of cheap methods of producing liquid phosphoric acid from phosphates. Discovery and exploitation of phosphate deposits in different parts of the world were reported. The opening of large phosphate fields in Transjordan, which may have an especially important bearing on agricultural development in Palestine, was reported.

The development of new sources of potash in different parts of the world continues. American production had increased, although relatively small—about 1 per cent of the total world production. American imports of potash, which represent an annual expenditure of about \$18,000,000, came mainly from German and French sources. Of the 1928 world production of potash (1,650,000 tons of K.O.), about 80 per cent comes from the mines of Stassfurt and Galicia and 20 per cent from the Alsatian deposits.

BIBLIOGRAPHY. Sources of information regarding progress in the production and use of fertilizers are numerous. Attention is called especially to the following: Current progress in the fertilizer industry is recorded in *The Fertilizer Review*, published by the National Fertilizer Association, at Washington, D. C. Statistics of the fertilizer trade and industry will be found in reports of the Bureau of Foreign and Domestic Commerce and the Census Bureau of the Department of the Interior. The subject of nitrogen was discussed quite fully from an industrial standpoint in a series of papers presented at the meeting of the American Chemical Society, in September, 1928 (see *Congressional Record*, Dec. 6, 1928). The concentrated fertilizing materials which were being imported in considerable quantity from Europe are discussed in Tennessee Experiment Station Circular 18. Two books of special interest appearing during the year are *Handbook of Fertilizers*, by A. F. Gustafson (New York and London, 1928), and *Fixation of Atmospheric Nitrogen*, by F. A. Ernst (New York, 1928). See **CHEMISTRY, INDUSTRIAL**.

FESTIVALS. See **MUSIC**.

FIBIGER, fē'bi-gēr, JOHANNES. Danish pathologist, and winner of the Nobel Prize for medicine in 1926, died at Copenhagen, January 30. He was born in 1867, and became professor of pathological anatomy at the University of Copenhagen in 1900. After first devoting himself to work in diphtheria and tuberculosis, he engaged, in 1913, in chemical experiments dealing with cancer, tending to bring the study of that disease more into the field of exact science. His cancer research has been termed the greatest contribution to experimental medicine in

recent generations, and it made possible the further work of Yamagiwa, Itchikawa, and Tsutsui. Dr. Fibiger was vice president of both the Danish Cancer Committee and the International Association for the Investigation of Cancer, and, in 1926, he was made rector of the University of Copenhagen.

FICTION. See **LITERATURE, ENGLISH AND AMERICAN**; **FRENCH LITERATURE**; **GERMAN LITERATURE**; **ITALIAN LITERATURE**; **SCANDINAVIAN LITERATURE**; **SPANISH LITERATURE**.

FIDELITY INSURANCE. See **INSURANCE**.

FIELD ATHLETICS. See **ATHLETICS, TRACK AND FIELD**.

FIELD HOCKEY. See **HOCKEY**.

FIELD MUSEUM. See **ANTHROPOLOGY**.

FIJI ISLANDS. A British Crown colony, comprising a group of islands in the South Pacific about 250 in number (some 80 inhabited). Area, 7083 square miles; population at the census of 1921, 157,260, of whom 84,475 were Fijians, 60,634 Indians, and 3878 Europeans. The estimated population Jan. 1, 1927, was 171,644. The largest island is Viti Levu (4053 square miles) and the next, Vanua Levu (2130 square miles). The capital, Suva, on the south coast of Viti Levu, had a European population (including suburbs) of 1741. Coconuts, sugar cane, rice, tobacco, tea, tropical fruits, beans, sisal, and hemp are the principal products. Horses, mules, cattle, sheep, goats, and pigs are raised. No later figures for trade are available than those for 1926 when the exports were valued at £1,740,427, and the imports at £1,480,945. The revenue in 1926 was £584,515; expenditure, £535,957; public debt, £153,550. The total tonnage which entered and cleared in 1926 was 1,357,907 tons of which 983,402 were British. A privately owned small-gauge railway of 120 miles runs from Tavua to Sigatoka. The executive power is vested in a governor, appointed by the Crown, aided by an executive council and a legislative council of which the governor is president. The governor is also high commissioner for the Western Pacific. Governor in 1928, Sir Eyre Hutson, K.C.M.G., appointed 1925.

FINANCES. See **PUBLIC FINANCES, U. S.**

FINANCIAL REVIEW. Notwithstanding that business in the United States was somewhat depressed during the forepart of 1928, financial operations were active practically from the beginning of the year; while, after a short rest during the summer, the general scope of the speculative markets acquired an unprecedented breadth, which was maintained practically until the close of December. In spite of the fact that during the middle and latter part of the year rates of interest and discount were exceedingly high, both speculative and investment operations continued with but little heed to the money situation, and there was an enormous amount both of refunding and new financing. Popular interest in stock and bond operations was practically at high point, and there had been no preceding year in which the activity of stocks or the variation in their price was greater, taking all in all.

STOCK EXCHANGE OPERATIONS. The volume of operations on the New York Stock Exchange reached the wholly unprecedented level of 920,000,000 shares in 1928 as against 577,000,000 the year before, while the total volume of bonds (which lost popularity as stock gained it) trans-

ferred was \$2,935,661,100 as against \$3,321,000,000 par value the year before. This extraordinary breadth of trading in stocks gave rise during the latter part of the year to a succession of immensely heavy trading sessions on the Stock Exchange, the total being 29 days on each of which a total of 1,000,000, shares or more was transferred, while included in this number were two which exceeded 5,000,000 each, and six that exceeded 3,000,000. The tremendous turnover of business kept brokers' forces keyed up to the utmost, and advanced the price of seats on the Exchange to the level of \$575,000 before the close of the year. It had been predicted by some that the very high level of values which existed at the opening of the season would result in sharp reaction, and in some classes of stocks this was true, a decisive setback, for example, occurring at the beginning of the summer. Nevertheless, taking the year as a whole, prices not only did not react, but showed in many cases enormous gains, even above the very high level which prevailed at the opening. An index of one hundred representative shares showed, at the high point of the year, a combined average of 181.11 on November 30, as compared with a low of 141.11 near the opening of the year on February 20; while a similar index of thirty representative bonds showed a quotation of 102.22 at the high point on January 6 as compared with 98.60 at the end of the year's dealings.

Although, at the opening of summer, decisive reaction had occurred, and although on two or three other occasions, particularly at the beginning of December, sharp recessions had taken place, they had not lasted long enough, nor had they been of sufficient breadth, to be regarded as being much more than corrective readjustments designed to bring about a better technical position in the market. Save for these temporary and sporadic changes, the progress was steady, and was due to two principal factors—the continued presence of an almost unlimited amount of lending power furnished by the member banks (and eventually by the reserve banks), and the maintenance of an underlying strong base of profitable business. Influenced by these conditions, there was a far larger interest on the part of the public in general than had ever before been exhibited in American financial history. The announcement of unusual stock dividends by a few corporations and a great number of reductions in the par value of stock, resulting in profitable "split-ups" of existing shares, continued to maintain the popular interest in the whole situation, and if anything to broaden the general interest in buying both for cash and on margin. The presidential campaign, which had been viewed with some doubt up to the opening of November, resulted in a way which was considered by some as warranting renewed optimism with reference to the attitude of the Government toward business, and as a result there was an enormous wave of buying, which, immediately after the election, sent prices vigorously ahead to new high levels.

For the most part, business (as elsewhere seen) was good, yet it remained true that in a number of industries, recovery and improvement was only partial and unsatisfactory. The result was that in such businesses as coal, some phases of the textile trades, and others, prices of shares responded very slowly, or in some cases

even receded. Nevertheless, the number of enterprises in which gains were continuous and sizeable was so great as practically to offset in the popular mind the discouraging features of the outlook, an attitude which was greatly confirmed by the improved average net earnings of large groups of enterprises, which began to become known to the public toward the end of the calendar year.

Several industries showed during the year very decisive power of growth accompanied by ability to command better prices for their products, and as a result sharply rising values for securities representing them. Among these, the outstanding example was perhaps furnished by the copper shares which reported at the close of the year a fixed price of 17 cents per pound for ingot copper, the highest value of the metal for a number of years. Since at that price almost any active copper mine in the United States can make profits, the values of all copper shares rose enormously, some of them doubling in value, while a few had even greater increases. These increases were accompanied by higher dividends and extra distributions of various kinds.

In the oil industry, a similarly positive change occurred. During the year 1927, there had been overproduction of oil, depression in the prices of oil and its derivatives, and consequently low levels of oil shares and securities generally. At about the beginning of 1928, oil producers had succeeded in "getting together" with regard to a programme of "voluntary" restriction of output, which was quite successful and resulted during the year in reducing the amount of "carry-over" that had been so troublesome a feature in the industry for a number of years before. Accordingly, oil shares rose decidedly, upon the basis of good prospects in the industry, and during the second half of the year, earnings advanced quite distinctly. A good many oil shares were from 40 to 50 per cent higher at the end of the year than at the beginning.

Among the public utility shares, earnings were good throughout the year, while the progress of reorganizing the industry brought many mergers and regroupings of companies with corresponding financial manipulation and advances in stock prices. In this group also, therefore, there were not a few enterprises whose stock actually doubled in value during 1928, largely due to good earnings and prospects of financial reorganization, although without very much increase in dividends which continued low.

NEW ISSUES. New issues during 1928 continued to be very numerous although those of foreign origin were discouraged by reason of the high rates for money which prevailed during the latter part of the year, so that there was a reduction in the latter department from about \$1,592,000,000 to \$1,426,000,000. However, the increase in domestic flotations much more than made up for this minor reduction in foreign bonds. The tendency of enterprises to finance themselves by suspending their borrowing at the banks, and instead, placing their new capital obligations through the stock and investment markets, continued, while at the same time the many changes in capital structure, to which reference has already been made, in the case of some special industries necessitated a very special amount of refunding operations.

According to the compilations of *The Journal*

of Commerce of New York, the new and refunding issues of 1927, classified by type of issue, and arranged to show division of the securities among major industries were, during 1928, as shown in the accompanying table:

SUMMARY OF NEW FINANCING FOREIGN

	<i>Government and Municipal</i>	
	1928	1927
Bonds	\$764,943,000	\$786,630,600
	<i>Corporate</i>	
Bonds	\$599,860,000	\$541,352,500
Stocks	211,690,482	60,210,875
Total	\$811,550,482	\$601,563,375
Total foreign .	\$1,576,493,482	\$1,388,193,975
	DOMESTIC	
	<i>State and Municipal</i>	
	1928	1927
Bonds	\$923,940,316	\$1,867,230,449
	<i>Railroads</i>	
Bonds	\$440,100,000	\$785,508,500
Stocks	228,388,843	5,693,500
Total	\$668,488,843	\$791,202,000
	<i>Public Utility</i>	
Bonds	\$1,352,577,325	\$2,083,832,500
Stocks	1,075,212,892	321,465,882
Total	\$2,427,790,217	\$2,405,298,382
	<i>Industrial</i>	
Bonds	\$768,534,837	\$1,494,532,250
Stocks	1,542,815,971	518,897,970
Total	\$2,311,350,808	\$2,013,430,220
	<i>Financial</i>	
Bonds	\$201,757,190	\$285,543,514
Stocks	998,771,143	179,893,450
Total	\$1,209,528,333	\$465,436,964
	<i>Farm Loan</i>	
Bonds	\$43,925,000	\$169,450,000
	<i>Real Estate</i>	
Bonds	\$527,895,000	\$473,278,350
Stocks	11,194,500	24,142,275
Total	\$539,089,500	\$497,420,625
Bond total ...	\$5,623,532,668	\$8,487,358,663
Stock total ...	4,068,073,831	1,110,303,952
Total domestic .	8,115,113,017	8,209,468,640
Grand total .	\$9,691,606,499	\$9,597,662,615

PROPORTION OF REFUNDING

	<i>New Capital</i>	<i>Refunding</i>	<i>Totals</i>
<i>Foreign Gov't and municipal</i> ...	\$764,943,000	\$8,300,000	\$756,643,000
<i>Corporate</i> ...	811,550,482	54,500,000	575,050,482
<i>Domestic Gov't and municipal</i> ...	923,940,316		923,940,316
<i>Railroad</i> ...	668,488,843	222,737,500	445,751,343

SUMMARY OF NEW FINANCING—Continued

	<i>New Capital</i>	<i>Refunding</i>	<i>Totals</i>
Public util-ity . . .	\$2,427,790,217	\$370,621,045	\$2,057,169,172
Industrial	2,311,350,808	312,585,930	1,998,764,878
Financial	1,209,528,333	1,000,000	1,199,528,333
Farm loan	43,925,000		43,925,000
Real estate	539,089,500	37,168,500	539,089,500
Total .	\$9,691,606,499	\$1,006,012,975	\$8,690,693,524

MOVEMENT OF GOLD. During the year 1928 movements of gold into and out of the United States and into and out of its ownership, continued to be large although these movements were much more pronounced early in the year than during the later months. The outward movement continued active until after mid-year and was sporadically noticeable from then on until the end of the twelvemonth. According to figures furnished by the Secretary of the Treasury, the total outgo up to the end of June, 1928, was about 280 million dollars while subsequent losses brought the net outgo for the year close to 400 million dollars. The Federal Reserve statement already elsewhere presented (see **BANKS AND BANKING**) shows a loss in holdings of the reserve banks of considerably less than that amount, the net outgo, as compared with the end of 1927 being not more than 150 million dollars. These foreign shipments of gold were primarily intended for the purpose of reestablishing foreign bank reserves, particularly those of France, which took about 257 millions, and of Argentina, which received about 131 millions. Other shipments, such as those to Germany, Italy, Poland, Brazil, and Uruguay grew out of the necessity of maintaining, or the desire to re-establish, a gold standard in those countries, or to maintain a stable rate of exchange between them and others. The flow of silver to the eastern countries was considerably less than in earlier months and on the whole the stability of gold holdings, internationally viewed, was considerably greater than during the preceding year. Federal Reserve banks continued the practice of "earmarking" gold in the United States for the purpose of avoiding actual shipment in those cases where such earmarking furnished an acceptable substitute for real transfers. In the following table, which affords a survey of imports, exports, and earmarking the national movements of gold imported into, and shipped away from, the United States are briefly summarized.

GOLD MOVEMENTS

1928	<i>Imports</i>	<i>Exports</i>	<i>Excess imports or exports</i>	<i>Gold Earmarked End of month</i>	<i>Monetary Gold stock End of month</i>
January	\$38,320	\$52,086	—\$13,766	\$193,919	\$4,373,000
February	14,686	25,806	—11,120	191,051	4,362,000
March	2,683	97,536	—94,853	155,251	4,305,000
April	5,319	96,469	—91,150	109,511	4,266,000
May	1,968	83,686	—81,721	136,050	4,160,000
June	20,000	99,932	—79,932	105,997	4,109,000
July	10,331	74,190	—63,859	45,050	4,118,000
August	2,445	1,698	747	39,134	4,123,000
September	4,273	3,810	463	40,334	4,125,000
October	14,310	990	13,320	39,134	4,143,000
November	28,000 *	22,000 *	6,000	64,134	4,124,000 *
December	24,940	1,636	+ 23,304	59,400	4,141,000
Year	168,887	560,759	—391,861	59,400	4,141,000

* Estimated.

ESTIMATED BALANCES OF INTERNATIONAL PAYMENTS OF THE UNITED STATES, CALENDAR
YEARS 1926 AND 1927
[In millions of dollars]
1926 (revised) 1927

Items	Exports, visible and in- visible (credits)	Imports, visible and in- visible (debits)	Balance	Exports, visible and in- visible (credits)	Imports, visible and in- visible (debits)	Balance	Year's net change
COMMODITY TRADE							
Merchandise exports and imports (as reported)	4,809	4,481	+ 378	4,864	4,184	+ 680	+ 302
Silver	92	70	+ 22	76	55	+ 21	+ 1
Bunker coal and oil sales	78	33	+ 45	60	29	+ 31	+ 14
Ship chandling, ship repairs, and tonnage dues	11	5	+ 6	11	5	+ 6	...
Sale of vessels	1	0	+ 1	4	5	- 1	- 2
Unrecorded parcel-post shipments	19	25	- 6	22	22	...	+ 6
Other merchandise adjustments .....	....	180	- 180	....	189	- 189	- 9
Total of commodity trade	5,010	4,744	+ 266	5,037	4,489	+ 548	+ 282
MISCELLANEOUS ITEMS							
Freight payments and receipts:							
Overseas and Great Lakes traffic	111	166	- 55	125	149	- 24	+ 31
Railway earnings on transit traffic	16	2	+ 14	15	3	+ 12	+ 2
Payments for foreign inland freight on United States imports .....	....	20	- 20	....	20	- 20	...
Tourist expenditures, Canadian border	45	177	- 132	51	197	- 146	- 14
Tourist expenditures, Mexican border	5	6	- 1	5	6	- 1	...
Tourist expenditures, overseas	92	526	- 434	97	567	- 470	- 36
Ocean-borne passenger traffic (by "substitution")	69	....	+ 69	89	....	+ 89	+ 20
Yield of long-term private investments:							
Received from American investments abroad	678	....	+ 678	738	....	+ 738	+ 60
Paid to foreign investors in United States .....	....	190	- 190	....	203	- 203	- 13
Yield of short-term interest and commissions:							
Collected from foreigners abroad	57	....	+ 57	57	....	+ 57	...
Paid to foreigners abroad .....	....	78	- 78	....	78	- 78	...
Immigrant remittances	35	253	- 218	35	241	- 206	+ 12
War-debt receipts of U. S. Treasury:							
Interest	160	....	+ 160	160	....	+ 160	...
Principal	35	....	+ 35	46	....	+ 46	+ 11
Other United States Government receipts, United States Government payments, and foreign representation here	46	89	- 43	57	86	- 29	+ 14
Charitable and missionary contributions .....	....	46	- 46	....	43	- 43	+ 3
Motion-picture royalties	75	4	+ 71	75	4	+ 71	...
Insurance transactions	80	70	+ 10	80	70	+ 10	...
Miscellaneous minor items:							
Imports of Canadian electric power .....	....	12	- 12	....	12	- 12	...
Foreign subscriptions to American press	5	1	+ 4	5	1	+ 4	...
Patents and copyright sales and royalties	15	15	...	15	15	...	...
American advertising abroad	2	10	- 8	2	10	- 8	...
Cablegrams, radiograms, and telephone service	22	18	+ 4	22	18	+ 4	...
Total of commodity and miscellaneous items	6,558	6,427	+ 131	6,711	6,212	+ 499	+ 368
MOVEMENT OF PRIVATE LONG-TERM CAPITAL							
New American investments abroad:							
Foreign securities publicly offered here (par value) .....	....	1,305	- 1,305	....	1,558	- 1,558	- 253
Deduct for "refunding to Americans"	182	....	+ 182	208	....	+ 208	+ 26
Deduct for American underwriters' commissions	81	....	+ 81	63	....	+ 63	- 18
Deduct for securities issued below par	40	....	+ 40	57	....	+ 57	+ 17
Add new "direct investments" abroad by Americans .....	....	240	- 240	....	257	- 257	- 17
Add foreign stocks and bonds bought from foreigners in small lots .....	....	115	- 115	....	161	- 161	- 46
Changes in previous American investments abroad:							
Bond-redemption payments received from foreigners	250	....	+ 250	200	....	+ 200	- 50
Sinking-fund payments received from foreigners	72	....	+ 72	104	....	+ 104	+ 32
Resale to foreigners of direct investments	51	....	+ 51	51	....	+ 51	...
Foreign stocks and bonds resold to foreigners	286	....	+ 286	412	....	+ 412	+ 126
New foreign investments in the United States:							
Direct investments	32	....	+ 32	28	....	+ 28	- 4
American stocks and bonds sold to foreigners	636	....	+ 636	891	....	+ 891	+ 255
Changes in previous foreign investments in United States:							
Redemption and sinking-fund payments to foreigners .....	....	65	- 65	....	70	- 70	- 5

ESTIMATED BALANCE OF INTERNATIONAL PAYMENTS OF THE UNITED STATES, CALENDAR
YEARS 1926 AND 1927—Continued
[In millions of dollars]
1926 (revised) 1927

	Exports, visible and in- visible (credits)	Imports, visible and in- visible (debits)	Balance	Exports, visible and in- visible (credits)	Imports, visible and in- visible (debits)	Balance	Year's net change
American stocks and bonds bought back from foreigners .....	....	509	— 509	....	639	— 639	— 130
Total of private funded-capital items	1,630	2,234	— 604 ^b	2,014	2,685	— 671 ^b	— 67
UNFUNDED ITEMS							
Net change in international banking ac- counts, as revealed by questionnaire	359	....	+ 359	....	....	...	— 359
PURE CASH ITEMS ^c							
Gold	116	214	— 98	207	201	+ 6	+ 104
Changes in earmarked gold	50	24	+ 26	183	23	+ 160	+ 184
Total of gold and currency	166	238	— 72	390	224	+ 166	+ 238
Grand total, all items	8,713	8,899	— 186 ^d	9,115	9,121	— 6 ^d	+ 180 ^d

^a Largely a deduction from American tourist expenditures.

^b Estimated "net export of capital."

^c Observe that imports (receipts) of gold and currency appear in the debit column, while all other entries in the debit column are predominantly cash payments; the credit column contains similarly divergent entries.

^d Discrepancy, due to errors and omissions. Total errors would probably be much greater, since errors tend to offset one another.

The major part of these exports went to the following countries:

France	\$257,000,000
Argentina	181,000,000
Brazil	55,000,000
United Kingdom	41,000,000
Germany	27,000,000
Italy	20,000,000
Uruguay	11,000,000
Poland	8,000,000

INTERNATIONAL BALANCE. As a result of a merchandise balance which during the year gave to the United States a net credit of \$1,040,000,000 the country was able to bear gold movements and heavy new financing with comparatively little disturbances though the rising cost of money bore witness to the narrowing of the available capital margin. The estimated Balance of International payments computed in 1928 by the Department of Commerce for the year 1927, furnished the background for these changes during the past 12 months.

COMMODITY PRICES. Prices of the major articles of necessity showed very substantial stability during the year 1928, although, of course, the usual seasonal fluctuations were to be noted as well as some changes due to alterations in business organization and in arrangements for the definite fixing of values. Prices of agricultural products were rather more stable than during preceding years and on the whole were more favorable to the farmer class in the aggregate. Wheat (No. 2 Red) was reported at the close of 1928 as bringing approximately \$1.54½ per bushel in Chicago as compared with the price a year earlier of \$1.49¾ to \$1.50¾. Cotton showed not only greater stability but a higher average level of prices than in 1927. At the opening of the year the quotation on middling upland cotton had been approximately 20 cents and during 1928 this figure was maintained with a slight advance to approximately 20.55 cents. Discussion of methods on the N. Y. Cotton Exchange had led to substantial alterations in the regulations covering deliveries and quotations and these changes were considered favorable to the farmer. Espe-

cially high prices were realized during the year by producers of meats of all classes, although some reaction occurred late in the season. Family beef which had been \$33 at the close of 1927 was quoted to \$30 to \$31, and mess pork which had been quoted at \$32 to \$34 at the beginning of 1928 was approximately \$30 to \$31 at the close of the year. Nearly all agricultural commodities were, however, higher than recent yearly averages, the result being to give the farmer a distinctly better purchasing power. See AGRICULTURE and articles on various crops.

Import commodities, such as rubber, sugar, coffee, and others, indicated continued disposition to decline for a variety of reasons, partly, as during the preceding year, the result of alterations in foreign methods of price control. On the other hand, home control of such prices of articles as copper and of oil made very decided progress during the year 1928. The net result, however, was to leave the price index of wholesale prices very little altered as an average from its position 12 months earlier, the index for December 1928 standing at approximately 96.7 per cent as against 96.8 per cent in 1927.

FOREIGN EXCHANGE. Efforts toward stabilization which had been in progress in various countries ever since 1925 continued during the year 1928, the result being to advance the movement for monetary reform quite materially. Italy just at the close of 1927 had announced her intention of fixing the value of the lira at 19 to the dollar and the process of defending and confirming this policy in application was vigorously prosecuted throughout the fall of 1928. France, early in the year, made known her definite stabilization of the franc at approximately the price which had prevailed during the preceding months and which was roughly equivalent to 24 to the dollar. Substantial success, at least of a preliminary sort, was attained both by Italy and by France in the maintenance of these values during the year, the result being to establish something approximating a "pegging" of exchange with the United States and England. Inasmuch as a similar condition already prevailed as regarded marks and sterling in relation to dollars, fluctuations in foreign exchanges

so far as the major countries were concerned largely disappeared and with their disappearance a strong tendency to greater stability in the minor exchanges naturally developed. The accompanying table sketches the major fluctuations in exchange quotations occurring during the year.

MONTHLY HIGH AND LOW CABLE RATES FOR STERLING, FRANCS, LIRE, GUILDERS AND PESETAS DURING 1928

Month	Sterling		Francs		Lire		Guilders		Pesetas	
	High	Low	High	Low	High	Low	High	Low	High	Low
January ...	\$4.88 ³ / ₃₂	\$4.87 ¹ / ₂	\$0.093 ³ / ₅₆	\$0.092 ³ / ₃₂	\$0.052 ⁹ / ₃₂	\$0.052 ⁸ / ₁₆	\$4.039	\$4.029 ¹ / ₂	\$1.736	\$1.687
February ...	4.88 ¹ / ₁₆	4.86 ² / ₃₂	.093 ² / ₅₆	.092 ⁵ / ₃₂	.0530	.052 ⁸ / ₃₂	.4032 ¹ / ₂	.4023	.1713	.1688
March	4.88 ⁵ / ₁₆	4.87 ¹ / ₁₆	.093 ³ / ₅₆	.093 ¹ / ₃₂	.0529 ¹ / ₃₂	.052 ⁷ / ₁₆	.4029 ¹ / ₂	.4022 ¹ / ₄	.1691	.1671
April	4.88 ¹ / ₃₂	4.87 ¹ / ₁₆	.093 ³ / ₅₆	.093 ⁷ / ₁₆	.0528 ¹ / ₂	.052 ⁶ / ₃₂	.4035 ¹ / ₂	.4028	.1684	.1658
May	4.88 ⁷ / ₁₆	4.87 ⁷ / ₈	.093 ³ / ₅₆	.093 ⁷ / ₁₆	.0527 ¹ / ₄	.052 ⁶ / ₃₂	.4037 ¹ / ₂	.4030 ¹ / ₂	.1690	.1659
June	4.88 ⁷ / ₁₆	4.87 ¹ / ₃₂	.093 ³ / ₅₆	.092 ¹ / ₁₆	.0527 ¹ / ₈	.052 ⁵ / ₃₂	.4038 ³ / ₄	.4027	.1672	.1628 ³ / ₂
July	4.87 ³ / ₄	4.85 ¹ / ₃₂	.093 ² / ₅₆	.091	.0525 ¹ / ₈	.052 ³ / ₁₆	.4031 ¹ / ₂	.4020	.1653	.1644
August	4.85 ⁵ / ₈	4.85 ¹ / ₄	.091 ¹ / ₂	.090 ¹ / ₂	.0524 ¹ / ₄	.0523	.4020	.4008	.1684 ¹ / ₂	.1643 ³ / ₂
September ...	4.85 ⁵ / ₁₆	4.84 ² / ₃₂	.091 ¹ / ₄	.090 ¹ / ₂	.0523 ¹ / ₄	.0522 ¹ / ₁₆	.4011 ³ / ₄	.4008	.1662	.1647
October	4.85 ¹ / ₄	4.84 ² / ₃₂	.091 ¹ / ₄	.090 ¹ / ₄	.0524 ¹ / ₄	.0522 ¹ / ₈	.4011	.4008	.1640	.1609
November	4.85 ⁵ / ₁₆	4.84 ³ / ₄	.091 ¹ / ₈	.090 ¹ / ₂	.0524 ¹ / ₄	.052 ³ / ₈	.4018	.4010	.1622	.1611 ¹ / ₂
December ...	4.85 ¹ / ₁₆	4.85	.091 ¹ / ₄	.090 ⁵ / ₈	.0524 ¹ / ₈	.0523	.4021	.4015	.1632	.1614

MONEY RATES. Money rates underwent very unusual and extreme fluctuations during the year 1928. At the opening of the year, there was already some indication of tightness and of scarcity in the money market and these conditions continued to develop during the first half of the period. The upward movement of rates, although the direct outgrowth of steadily increasing absorption of credit in connection with stock-exchange loans, represented the conceded failure on the part of the banking authorities in the successful operation of their policy of maintaining low discount changes in order to safeguard the interests of the Bank of England and its currency reform which had been undertaken a year earlier.

Light was thrown upon the discount policy of the Federal Reserve System during the years 1927-28 by the annual report of the Secretary of the Treasury filed with Congress at the close of 1928. In this the Secretary explained the low-rate policy of 1927 officially for the first time, saying:

As it became apparent, first, that the objects of the policy originally adopted were being accomplished, and, second, that speculation was growing, the policy was reversed. From the middle of December onward the reserve banks stopped offsetting gold exports by the purchase of securities, and allowed gold exports to work their usual effects on the credit situation. In January the system went further. More than \$100,000,000 of securities were sold. Between the latter part of the month and March 1, the discount rates of all of the Federal Reserve banks were raised from 3½ to 4 per cent. The loss of gold by export and the sale of securities forced the banks to increase their borrowings. However, the action taken early in the year unquestionably was not effective with reference to speculation, partly due to the activities of powerful groups of speculators, and partly due to the fact that the public in general believed and acted as if the price of securities would indefinitely advance.

When it became apparent in March that repeated increases in credit were again taking place for speculative purposes, the Federal Reserve System resumed its sale of securities and discount rates were still further increased in April, May, June, July, and August. The discount rate at all Federal reserve banks was 4 per cent on June 30, 1927. One year later the rate at all Federal Reserve banks was 4½ per cent. There were increases to 5 per cent, becoming effective from July 11 to August 1, 1928, in all Federal Reserve banks except those in Kansas City, Minneapolis, Dallas, and San Francisco.

During the autumn of 1928 Governor Roy A. Young of the Federal Reserve Board delivered two addresses before organizations of bankers in which he spoke reassuringly of the situa-

tion and promised further extensions of credit if needed during the remainder of the year. Governor Young had already earlier in the year appeared before the Senate Committee on Banking and Currency and had stated that he had no reason for thinking that brokers' loans were too high. His general attitude, therefore, was

regarded by many persons as rather favorable on the whole to active stock-market use of bank credit. Apparently, then, the position of the reserve board was not such as to offer obstacles to undue credit expansion.

However, this attitude on the part of the board could not, and did not, prevent a progressively increasing scarcity of money. Call rates steadily advanced after mid-summer until at the close of the year they were frequently from 10 to 15 per cent, the highest figure on the Stock Exchange being about 12 per cent. This, however, was rightly regarded as an abnormal situation for a country with high financial standing, powerfully organized and possessed of the greatest stock of gold in the world. An anomalous phase of the whole situation was found in the maintenance of a low reserve rate in the western districts on the excuse that this would assist in providing cheap money for the farming interests.

As a matter of fact the rates at reserve banks had no particular relationship to commercial borrowing rates, but it was an interesting phase of the whole situation that there was throughout the year a disposition on the part of the banks of the United States to maintain their loans to commercial customers at about the same level as in the past, taking care to avoid anything that might appear like an attempt to put rates forward to figures that would appear to have been influenced by the high charges prevailing in the stock market. There was therefore, during the bulk of the year, and especially during the latter months a distinct differential against stock-market transactions so far as open-market borrowing was concerned, notwithstanding that during the latter part of the year the market was constantly endeavoring to draw funds away from the interior by the offer of very high rates, and notwithstanding also that reserve banks maintained consistently throughout the year the same general rate of discount and same discount policy both with respect to loans designed for stock-market purposes and loans designed for commercial objects.

The unfavorable conditions which had developed with respect to farm-land banks during the preceding year were not repeated, but some amelioration occurred. Taken in conjunction with the

more settled banking conditions throughout the agricultural region it soon became clear that farm securities were beginning to recover the preferred position which they had had in former years, so that it could be said that the agricultural investment field was decidedly better. On the other hand, bankers' acceptance credit, which had been a favorite form of lending to presumably choice customers during preceding years, was seriously abused. On account of the great disparity between stock-market and even commercial rates on the one hand, and acceptance rates on the other, the volume of acceptances was greatly enlarged in the endeavor to get money out of Reserve Banks. Toward the end of the year it rose to a record high figure of about one and a quarter billion dollars and among other effects following from it was that of practically driving the older commercial paper out of use. So serious did the abuse become that toward the close of the year, a movement was begun in the reserve system for the purpose of raising the rate on acceptances to a level equal to that of commercial paper, a situation which had existed only once in the history of the Federal Reserve System, for a part of the year 1920.

In the investment field the declining yield of bonds and preferred stocks which had been in progress during 1907 was reversed, and distinctly better conditions from the income standpoint prevailed, fixed securities tending to react in quoted value at the same time that they accordingly yielded a better net income upon the investment in them. Taken in conjunction with the improving earnings of many companies, this situation tended to give to the investor in fixed-rate securities a distinctly better position than he could get as a common-stock holder insofar as the latter situation gave him a speculative opportunity that would otherwise have been out of the question. Very substantial changes in the general investment position of the community were accordingly characteristic of the year 1928.

See also BANKS AND BANKING; BUSINESS REVIEW; PUBLIC FINANCE; TAXATION.

FINDEISEN, NIKOLAI FEDOROVITCH. A distinguished Russian musicologist, died at Leningrad, September 20. He was born there, Aug. 5, 1868, and studied music under Philip and Nikolai Sokolov. In 1894 he founded the *Russkaya Muzykalnaya Gazeta*, which immediately was recognized as the most important musical periodical of Russia, and by the end of the century was definitely established among the world's most scholarly and influential musical journals. After retiring from its editorship, in 1918, Findeisen founded the Museum of the Leningrad State Philharmonia, of which he was curator until his death. His life work, which occupied him for forty years until its completion in 1928, is *The Outlines of the History of Music in Russia from the Earliest Times to the End of the Eighteenth Century*, to be published in seven volumes (in Russian and English). The first volume appeared a few weeks before his death. He also wrote several books dealing with various aspects of the work of Glinka, a *History of Russian Song* (1903), *History of the Petrograd Section of the Imperial Russian Music Society* (1909), valuable monographs on Dargomyzhsky, Rubinstein, Rimsky-Korsakov, Bessel, and Smolensky. He edited the correspondence of Stassov, and was one of the principal con-

tributors to the Russian editions of Riemann's *Musiklexikon* (1901, 1916).

FINE, HENRY BUCHARD. American mathematician and educator, died at Princeton, N. J., December 21. Born at Chambersburg, Pa., Sept. 14, 1858, he was graduated from Princeton in 1880, and, after receiving an A.M. degree in 1883, his Ph.D. degree was conferred by the University of Leipzig in 1885. Having been tutor at Princeton, 1881-84, he was made assistant professor on his return from Germany, and in 1891 was appointed Dod professor of mathematics, serving in that capacity, and as dean of the department of science from 1911 until his death. He was also dean of the faculty, 1903-12, and was acting president in the last two years of his office, between the administrations of his close associate, Woodrow Wilson, and John Grier Hibben. Williams conferred on him the LL.D. degree in 1909. Dean Fine, who was president of the American Mathematical Society, 1911-12, contributed many articles to scientific periodicals and wrote: *The Number System of Algebra* (1891, 2d ed., 1903); *Euclid's Elements* (1891); *A College Algebra* (1905); *Coördinate Geometry*, with Henry Dallas Thompson, (1909); and *Calculus* (1927).

FINE ARTS. See PAINTING; SCULPTURE; ART EXHIBITIONS; ART MUSEUMS; ART SALES; ETC.

FINLAND. An independent republic of Europe; formerly a grand duchy of the Russian Empire; an independent republic since 1917; bounded on the east by Russia, on the north by the Arctic Ocean and Norway, on the west by Sweden and the Gulf of Bothnia, and on the south by the Gulf of Finland. Capital, Helsingfors.

AREA AND POPULATION. The total area exclusive of water is 132,608 square miles: population, according to the census of 1920, 3,364,807; estimated Dec. 31, 1927, 3,582,000. In 1927 the rural population was 2,962,000. The movement of population in 1926 was: Births, 76,875; deaths, 47,526; marriages, 22,695; emigration, 6043. The principal towns with their populations in 1927 were: Helsingfors, 221,000; Abo, 63,000; Tammerfors, 53,000; and Viborg, 50,000. The Evangelical Lutheran religion is that of the national church to which the bulk of the population belongs, but freedom of worship is granted to all.

EDUCATION. Primary instruction is free and compulsory between the ages of 7 and 15. For elementary education in 1926 there were in the country 4548 elementary schools with 220,274 pupils; 2552 lower elementary schools, with 64,052 pupils; and 867 infant schools under the superintendence of the church with 96,035 pupils. In the towns there were 1310 classes of higher elementary schools with 40,091 pupils. For secondary education there were 116 lycées, leading to university, 2304 teachers and 35,537 pupils; 65 middle schools, with 622 teachers and 9206 pupils; 8 training colleges for elementary school teachers, with 114 teachers and 1614 students; 6 training schools for infant school teachers; and 51 high schools for the people, with 352 teachers and 2745 students. There are three universities: One at Helsinki, with 308 teachers and 3646 students in 1927; and two at Turku; one Swedish, with 39 teachers and 172 students; and one Finnish, with 25 teachers and 302 students. There is also a great variety of agricultural, horticultural

tural, forestry, industrial, and other technical schools.

PRODUCTION. Although the cultivated area of Finland covers only 6.1 per cent of the land, agriculture is the chief occupation of the people of the Republic. The acreage and yield of the principal crops in 1926 were as follows: Rye, 565,283 acres, 302,490 tons; barley, 272,103 acres, 156,100 tons; oats, 1,090,209 acres, 592,726 tons; potatoes, 171,139 acres, 851,008 tons; hay, 2,460,126 acres; total land under cultivation in 1926, 5,292,723 acres. The livestock census in 1926 showed 399,998 horses; horned cattle, 1,860,479; sheep, 1,413,697; goats, 11,076; and pigs, 390,536. The butter production in the same year was 20,062 tons. The forests are a great source of wealth, Finland being better off in that respect than any country in Europe except Russia. Finland had in 1926, 3526 large factories, employing an aggregate of 149,367 workers, and yielding an aggregate product of 10,935,000,000 marks. The three leading groups from the point of view of output were wood industries, paper factories, and iron and mechanical works.

COMMERCE. Finland's imports in 1927 were valued at 6,367,000,000 marks and her exports at 6,322,000,000 marks, showing an adverse trade balance of 45,000,000 marks. The leading exports were timber, pulp and paper, and food obtained from animals; the leading imports, cereals, colonial produce and spices, and metals.

FINANCE. The proposed Finnish budget for 1929, as approved by the President of the Republic on Aug. 20, 1928, and submitted to the Diet, called for expenditures of 4,232,300,000 Finnish marks (\$106,654,000), of which the ordinary group accounts for 3,491,500,000 marks and the extraordinary for 740,800,000 marks. Total income was calculated at 4,206,200,000 marks (\$105,996,000), of which 4,203,300,000 marks were ordinary revenues. The balance was to be effected by a transfer of 26,100,000 marks from the cash reserve, as against a balance for 1928 composed of 161,500,000 marks from the cash reserve and 117,600,000 marks from a foreign loan.

The 1929 proposals totaled practically the same as the 1928 budget, which was 4,233,100,000 marks. A notable improvement, however, was the increase of 265,200,000 marks in proposed ordinary income. Practically all categories of ordinary revenue show increases over the 1928 budget. An expected increase in the tax on automobiles was calculated to raise revenues from that source by 25,000,000 marks, to a total of 30,000,000 marks, all to be used for highway improvement. An increase of 22,500,000 marks in ordinary expenditure is offset by a similar decrease in the extraordinary accounts and represents largely a transfer of certain items. The proposed budget allows 1,007,500,000 marks for the Ministry of Communications—54,700,000 more than for 1928. Of this increase, 24,500,000 marks were to go for construction and upkeep of highways and bridges, the total appropriation for which was 126,000,000 marks; 25,400,000 marks were to go to the railways; and 2,600,000 to posts and telegraphs. Proposed extraordinary expenditures for communications amounted to 272,300,000 marks, a reduction of 32,600,000 marks. Of this amount, 100,000,000 marks were for new railway buildings, 79,000,000 for rolling stock, 13,000,000 for

extension of the telephone system, and 18,000,000 for grants for upkeep of highways. At the end of October, 1927, the total foreign debt was 2,236,029,000 marks and the internal debt, 492,716,000 marks.

COMMUNICATIONS. The State Railways of Finland constitute the only important railway system in that country. Their length at the end of 1927 totaled 6358 kilometers (195 kilometers double track) of 1.524-meter gauge, of which 1571 kilometers were branches and sidings. Operating revenues amounted to 836,181,015 marks, of which 259,660,953 marks were from passenger and 554,100,631 from freight. Other revenues, such as telegraphs, rents, etc., amounted to 22,419,431 marks. Operating expenses were 679,947,094 marks. Rolling stock in operation at the close of the year consisted of 547 locomotives, 19,484 freight cars, and 1301 passenger cars. All rolling stock receives close attention and was in good condition. For the five-year period, 1926-1930, the Diet passed a scheme of construction, which when completed will cover 840 kilometers of new railways. Of these plans for new construction, an appreciable portion already has been carried out. During 1928, work on the continuation of the railway from Tornio (Tornea) to Karunki was finally completed by the construction of the Karunki-Kauliranta line (51 kilometers) and its inauguration on Aug. 26, 1928. This railway which reaches almost to the Arctic Circle runs through the beautiful valley of the Tornio River. Traffic on this part of the railway is served by the port railway built to Roytta, the outer port of Tornio. Another important railway opened to traffic in 1923 was the Joensuu-Outokumpu line (50 kilometers), which joins the State's rich copper-mine districts to the railways of the country. Of other railways, the sections Nurmes-Kiehima (125 kilometers) and Oulu (Uleaborg) Vaala (92 kilometers) on the Nurmes Oulu Railway were opened to traffic in 1928, as well as the section Viipuri-Avrappaa (50 Kilometers) on the Viipuri-Valkjärvi Railway.

GOVERNMENT. According to the constitutional law of July 17, 1919, Finland is a republic. Executive power is vested in a president elected for six years by the votes of the citizens and in a ministry appointed by him but responsible to the diet; legislative power in a diet consisting of 200 members chosen by direct and proportional representative election, all citizens who have reached their 24th year possessing the right to vote. President of the Republic in 1928, Dr. Lauri Relander, elected Feb. 16, 1925. The Council of State, appointed on Dec. 17, 1927, was as follows: Prime Minister, Dr. Juho Sunila; Foreign Affairs, H. J. Procopé; Finance, Juho Niukkanen; Interior, Matti Aura; Defense, Jalo Lahdensuo; Justice, T. H. Malinen; Education, Rev. Antti Kukkonen; Communications, Dr. Emil Hynninen; Commerce and Industries, Pekka V. Heikkinen; Social Affairs, Kalle A. Lohi; Minister without Portfolio, Dr. K. T. Jutila.

HISTORY. During the year, Finland had trouble enforcing the prohibition law which had been on the statute books for a decade. Severe measures were enacted by the Government to curtail the consumption of liquor, which was stated to be greater than before the prohibition act was passed. The familiar phases of prohibition, such as doctors' prescriptions, the search

of private premises without warrants, and the obtaining of evidence against violators of the law by private citizens, and the destruction of fittings in "speakeasies" were dealt with in Finnish legislation to attempt to get rigid enforcement. Certain quarters of the Finnish press restated that old truth that a law which is unpopular with the people can never be enforced.

On December 13 the Agrarian Ministry of Dr. Sunila resigned when it failed, by one vote, to receive a vote of confidence. The vote was taken because a postmaster was allegedly appointed for political reasons and because the civic guard in a small town had raised its flag on a building in defiance of the city council—an act which the Government had ignored. On December 22, Dr. Oskari Mantere, of the Progressive party, became the head of the following cabinet: H. J. Procopé, non-partisan, remaining as Foreign Minister; A. Kotonen, non-partisan, Justice; T. M. Kivimäki, Interior; A. K. Cajander, Defense; U. Brander, Agriculture, with K. E. Linpa as his Assistant Minister; H. M. J. Relander, non-partisan, Finance; L. Ingman, Coalition, Education; J. Castren, Coalition, Communication; K. Jarvinen, Coalition, Commerce; and N. A. Manio, Social Affairs. The party affiliation of non-progressives only is given above.

FIRE INSURANCE. See INSURANCE; FIRE PROTECTION.

FIRE PROTECTION. The statistics for fire losses in the United States and Canada showed a slight improvement during 1928, as compared with the figures for 1927 and 1926, and a considerable improvement as compared with the record of each of the years since 1919, being the lowest in ten years. Inasmuch as the industrially created values increased each year by great sums and the aggregate value of property exposed to possible fire damage was vastly greater than it was in 1919, the encouraging features of the situation may be noted.

The 1928 fire loss as compiled from the daily loss records of the *Journal of Commerce* (New York) with proper adjustment for the small and unreported fires, reached a total of \$301,267,560, as compared with \$320,595,000 the previous year and \$393,011,500 in 1926. During the latter half of 1928 the fire record receded to figures much below the normal for some years past.

The monthly record of fire losses for the past three years given in the subjoined table from the *Journal of Commerce* affords a picture of the rather startling improvement that had developed since the fire-loss peak was reached in the years 1922 to 1926. The three-year monthly table of fire losses is as follows:

	1926	1927	1928
January ..	\$41,118,750	\$37,910,000	\$43,260,800
February ..	30,939,750	26,285,000	41,105,400
March	42,854,600	26,807,600	30,377,000
April	52,408,400	39,720,000	25,980,600
May	32,764,200	20,713,000	23,202,000
June	28,676,000	25,481,200	11,123,000
July	31,723,400	24,248,600	17,106,400
August	27,833,400	24,299,800	17,728,600
September ..	19,300,000	21,875,000	17,182,800
October	14,877,000	22,326,600	22,414,160
November ..	26,724,400	18,992,200	20,587,800
December ..	43,757,600	31,935,400	31,204,000
Total ...	\$393,011,500	\$320,595,600	\$301,267,560

While these figures were stated to be commendable for the reduction shown, they were

in no wise justifiable, and represented an economic waste of national resources that constituted a serious drain even upon a wealthy nation.

Figures on a somewhat different basis are annually announced by the Committee on Statistics and Origin of Fires of the National Board of Fire Underwriters and are given herewith for a period of years.

FIRE LOSSES BY YEARS

1927	\$472,933,969	1913	\$203,763,550
1926	561,980,751	1912	206,433,900
1925	559,418,184	1911	217,004,575
1924	549,062,124	1910	214,003,300
1923	535,372,782	1909	188,705,150
1922	506,541,001	1908	217,885,850
1921	485,406,012	1907	215,084,709
1920	447,836,877	1906	518,611,800
1919	320,540,399	1905	165,221,650
1918	353,878,876	1904	229,198,050
1917	289,535,050	1903	145,302,155
1916	258,377,952	1902	161,078,040
1915	172,033,200	1901	165,817,810
1914	221,439,350	1900	160,929,805

These figures represent the actual reported loss to which is added 25 per cent for unreported damage and destruction.

The very welcome decrease in fire losses in the United States in 1928 and 1927 resulted not only from improvements in building construction and stricter local requirements, the results of which were beginning to be felt, but also from better municipal and industrial house-keeping, in the maintenance of cities and buildings in a condition where the fire risk was materially reduced. In addition, the National Chamber of Commerce had been carrying on an important campaign throughout the United States, while the National Fire Protection Association had maintained a field engineering survey staff visiting cities where the per capita loss had been over \$4. The work of these organizations aroused local interest and secured improvements particularly on the prevention side, but in many cases the need for improved fire departments and water supplies was a serious handicap, particularly as many cities had reached their tax limits and extensions or improvements in fire or water service were beyond their means. In many cases lack of pension systems for the personnel of the fire department required the retaining of superannuated firemen who were neither physically nor mentally able to deal with the conditions developing at a serious fire.

In an interesting analysis made by the Actuarial Bureau of the National Board of Fire Underwriters for the year 1927, it was stated that the fire loss in that year had been reduced to \$472,933,969 from \$561,980,751 in 1926. These returns were based on actual returns on losses for 1927 amounting to \$378,347,175, and \$449,584,601 for 1926 to which as usual 25 per cent was added for unreported losses. While this indicated an improvement, it was really a very serious question, and an examination of the conditions revealed the fact that as a result of types of building construction permitted, almost every city was at the menace of possible conflagrations that might involve a fire damage of many million dollars. Unquestionably, there had been an improvement in this field, yet thousands of structures were erected each year that were unsafe from the standpoint of fire. The second great risk was the general carelessness of the people of the United States, and the

third was the inadequate fire protection in many localities which might involve insufficient water supply, low pressure, untrained or inadequate personnel, lack of hose, obsolete or inadequate apparatus, or in rural districts the utter absence of fire protection.

The Actuarial Bureau in its analysis called attention to the fact that figures recorded a saving of \$9,120,696 in fire losses from lightning over 1926, the figures for the two years being \$9,084,630 and \$18,205,326. Next in order came exposure (including conflagrations) with a reduction of \$8,991,807, the figures for the two years being \$45,082,747 and \$54,074,554, respectively. Stoves, furnaces, boilers, and their pipes decreased from \$21,977,114 in 1926 to \$17,986,432 in 1927, or a reduction of \$3,990,682. Defective chimneys and flues in 1927 caused losses of \$19,523,904, or a decrease of \$3,587,714 from \$23,111,618 in 1926. Sparks on roofs as a cause of fire decreased from \$14,172,947 in 1926 to \$11,256,303 in 1927, or a reduction of \$2,916,644. Sparks from combustion accounted for \$4,121,148 fire loss in 1927 as against \$6,343,519 in 1926, a reduction of \$2,222,371. There was a decrease in fire loss from petroleum and its products, which in 1926 accounted for fire losses totaling \$14,978,599 and \$12,691,718 in 1927. Spontaneous combustion was responsible for \$13,640,804 fire loss in 1927 as against \$15,498,812 in 1926, a saving of \$1,858,018.

REPORTED FIRE LOSSES—1927

ACTUARIAL BUREAU NATIONAL BOARD FIRE UNDER-

WRITERS

Alabama	\$6,470,182
Arizona	900,536
Arkansas	4,710,283
California	20,000,272
Colorado	2,117,429
Connecticut	5,755,693
Delaware	561,821
District of Columbia	806,344
Florida	7,602,780
Georgia	6,662,001
Idaho	942,426
Illinois	27,940,545
Indiana	8,920,949
Iowa	5,424,164
Kansas	3,398,337
Kentucky	6,518,358
Louisiana	6,938,711
Maine	3,870,172
Maryland	3,755,401
Massachusetts	19,887,677
Michigan	18,367,890
Minnesota	7,180,063
Mississippi	5,332,890
Missouri	11,143,069
Montana	1,678,420
Nebraska	2,920,494
Nevada	281,317
New Hampshire	1,997,797
New Jersey	17,450,048
New Mexico	585,295
New York	48,559,113
North Carolina	6,569,743
North Dakota	1,914,089
Ohio	16,278,928
Oklahoma	6,438,201
Oregon	3,110,627
Pennsylvania	26,632,697
Rhode Island	2,167,723
South Carolina	4,259,478
South Dakota	1,473,522
Tennessee	7,643,290
Texas	17,401,085
Utah	1,338,746
Vermont	872,021
Virginia	5,145,424
Washington	6,918,294
West Virginia	5,484,186
Wisconsin	7,052,585
Wyoming	450,609
United States total	\$378,347,175

The totals of fire losses on the basis of individual States were as given in the preceding table.

Summarized on the basis of causes, totals were reached as follows:

STRICTLY PREVENTABLE CAUSES

	1927	1926
Defective chimneys and flues	\$19,523,904	\$23,111,618
Fireworks, firecrackers, etc.	893,663	718,942
Gas, natural and artificial	3,100,828	2,327,353
Hot ashes and coals, open fires	5,171,491	6,851,460
Ignition of hot grease, tar, wax, asphalt, etc.	1,699,298	1,880,240
Matches—smoking	29,345,929	30,160,233
Open lights	3,578,701	3,142,172
Petroleum and its products	12,691,718	14,978,599
Rubbish and litter	1,085,454	1,809,136
Sparks on roofs	11,256,303	14,172,947
Steam and hot-water pipes	184,931	395,640
Stoves, furnaces, boilers, and their pipes	17,986,432	21,977,114

PARTLY PREVENTABLE CAUSES

Electricity	12,360,557	13,783,303
Explosions	4,725,857	2,565,596
Exposure (including conflagrations)	45,082,747	54,074,554
Sparks from machinery	5,812,466	8,324,071
Incendiarism	2,403,615	2,202,492
Lightning	9,084,630	18,205,326
Miscellaneous known causes	3,408,359	4,191,737
Sparks from combustion	4,121,148	6,343,519
Spontaneous combustion	13,640,804	15,498,812

UNKNOWN CAUSES

Unknown causes (probably largely preventable)	\$171,038,429	\$202,369,737
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The Fire Waste Council of the United States Chamber of Commerce referring to the estimated losses by fire in 1927 of some 10,000 lives, called attention to the fact that of the deaths from fire 30 per cent were in the country and 70 per cent in the city. Of the injuries from fire 16 per cent were in the country and 84 per cent in the city. Of the deaths from fire, 31 per cent were children under 10 years of age and of the injuries, 13 per cent fall in the same class. Of the deaths by fire, 67 per cent occurred in dwellings as did 46 per cent of the injuries; 29 per cent of the deaths and 16 per cent of the injuries resulted from fires ignited by open flames. Defective heating devices were responsible for 16 per cent of the deaths and 11 per cent of the injuries. Improper use of inflammable liquids produced 23 per cent of the deaths and 26 per cent of the injuries.

FALL RIVER CONFLAGRATION. This most serious conflagration of the year started in the old Pocasset Mills in the early evening of Feb. 2, 1928, and destroyed some six blocks of the business centre of Fall River, Mass., with a loss estimated at over \$6,000,000. Notwithstanding the efforts of the city fire department, a high wind and near zero temperature soon placed the fire out of control and it raged for hours passing unchecked through buildings of inferior construction. Twenty-two cities and towns within a radius of 50 miles sent aid in men and apparatus, contributing 41 machines and 348 men, coming over the road in from 12 to 90 minutes, the last-named figure being required for three motor pumping engines from Boston. Good work on the part of the firemen served to prevent even greater damage.

Another serious fire of the year which caused the death of 38 people was on April 13, 1928,

when a gasoline explosion occurred in a garage at West Plains, Mo. The majority of fatalities were in a dance hall over the garage.

See **INSURANCE**, under **FIRE INSURANCE**.

FIRES, FOREST. See **FORESTRY**.

FISHERIES. See **ALASKA**; **CANADA**.

FISHES. See **ZOOLOGY**.

FISK UNIVERSITY. A coeducational institution for colored people at Nashville, Tenn.; founded in 1866. It consists of a liberal arts college, a music school, and a graduate department. The total enrollment of 503 for the autumn of 1928-29 included 206 men and 297 women. Enrollment in the music school was 82. The faculty numbered 35 and there were 24 administrative officers and assistants. The library contained approximately 21,000 volumes. The productive funds for 1927-28 amounted to \$1,289,678, and the income to \$395,930. Thomas Elsa Jones, Ph.D., was president; Ambrose Caliver, A.M., dean; and Jesse F. Beals, treasurer.

FITCHETT, WILLIAM HENRY. Australian editor and author, died at Melbourne, Victoria, May 25. He was born in Lincolnshire, England, went with his parents to Australia, and was educated at Melbourne University. He became a Wesleyan minister, and rose to the presidency of the general conference of the Methodist Church of Australasia. He was also principal of the Methodist Ladies' College, Hawthorn, Melbourne. He wrote many books, principally on religion and English and Australian history, and was best known to English readers as the author of *Deeds That Won the Empire*. He edited the *Australian Review of Reviews*, *Life* (a monthly magazine which he founded), *The Southern Cross*, and the *Melbourne Daily Telegraph*.

FIXED NITROGEN PRODUCTS. See **FERTILIZERS**.

FLAX. The flaxseed production in 1928 of 10 countries reporting to the International Institute of Agriculture, Rome, was estimated at 43,700,000 bushels as against 53,754,000 bushels in 1927, representing a reduction of 19.6 per cent. The 1928 production was also 13.1 per cent below the average production for the five years 1922-1926. The yields of the more important producing countries outside the United States were estimated as follows: India, 14,040,000 bushels; Canada, 3,499,000 bushels; Poland, 3,080,000 bushels; and Lithuania, 1,377,000 bushels. Argentina and the United Socialist Soviet Republics, the principal flaxseed producing countries, together with Uruguay, reported an increase in area over that of the preceding year. In the crop year 1927-28, Argentina produced 79,446,000 bushels and Uruguay 1,954,000 bushels.

According to estimates published by the U. S. Department of Agriculture, the flaxseed production of the United States in 1928 was 19,321,000 bushels on 2,721,000 acres, as compared with a yield of 25,847,000 bushels on 2,837,000 acres in 1927. The average yield per acre in 1928 was 7.1 bushels, or 2 bushels under that of the preceding year. The average farm price on Dec. 1, 1928, was \$2.01 per bushel or 15 cents above the corresponding price the year before. On this basis the total value of the crop in 1928 was \$38,857,000, while in 1927 it was \$48,079,000.

Of nine States reporting flaxseed production in 1928, the yields of the four producing the bulk

of the crop were as follows: North Dakota, 8,115,000 bushels; Minnesota, 5,518,000 bushels; South Dakota, 3,410,000 bushels; and Montana, 1,666,000 bushels. The average yields in these States were 7.1, 7.6, 5.8, and 8.5 bushels per acre, respectively. During the fiscal year ended June 30, 1928, the United States exported 589,173,000 pounds of linseed oil cake, 17,131,000 pounds of linseed oil-cake meal, and 2,221,000 pounds of linseed oil; and imported 18,112,000 bushels of flaxseed and 346,000 pounds of linseed oil.

Flax fibre production in ten European countries, exclusive of the United Socialist Soviet Republics, according to estimates received by the International Institute of Agriculture, Rome, indicated an increase in yield in 1928 of over 7 per cent above the yield of 1927 and of nearly 21 per cent above the average yield for the five years 1922-26. The yields of the principal fibre-producing countries were reported as follows: Poland, 164,106,000 pounds; Belgium, 81,342,000 pounds; Lithuania, including hemp fibres, 77,162,000 pounds; Latvia, also including hemp fibres, 33,510,000 pounds; The Netherlands, 30,865,000 pounds; and Czechoslovakia, 24,465,000 pounds. France in 1927 produced 45,579,000 pounds, Northern Ireland, 10,976,000 pounds; and the United Socialist Soviet Republics, which produce the greater part of the world's supply, 754,865,000 pounds. During the fiscal year ended June 30, 1928, the United States imported 6000 tons of manufactured flax to meet its fibre requirements.

FLETCHER, FRANK FRIDAY. American naval officer, died at New York, November 28. He was born at Oskaloosa, Iowa, Nov. 23, 1855, and was graduated from the United States Naval Academy in 1875. Rising through the successive grades, he was commissioned captain in 1908, rear admiral in October, 1911, and admiral in March, 1915. His various commands include, the torpedo boat, *Cushing*, the gunboats, *Kanawha* and *Eagle*, the cruiser, *Raleigh*, and the battleship, *Vermont*, and at one time he commanded the Newport torpedo station. He was appointed aide for the division on material to Secretary of the Navy George von L. Meyer, in 1910. Admiral Fletcher was placed at the head of the Third division of the Atlantic Fleet in 1913, subsequently commanding the Second and First divisions. It was he who, being in charge of the naval force on the west coast of Mexico from February, 1913, until April, 1914, seized and occupied Vera Cruz on Apr. 21, 1914, after President Huerta's refusal to salute the American flag. Admiral Fletcher was appointed commander-in-chief of the Atlantic Fleet in September, 1914. During the World War he served on the war industries board of the council of national defense, 1917, and also on the general board of the navy and the joint army-and-navy board. In 1925 he was appointed to President Coolidge's air craft board. As a result of his experience in active service, Admiral Fletcher invented a number of firing mechanisms, including a gun mount, and a rapid breech-closer. He was awarded the medal of honor for distinguished conduct in battle, and also the Distinguished Service Medal. He retired from active service, Nov. 23, 1919.

FLONZALEY QUARTET. See **MUSIC**.

FLOOD, WILLIAM HENRY GRATTAN. An Irish organist and musicologist, died at Enniscorthy,

Wexford, August 6. He was born at Lismore, Nov. 1, 1859. Chiefly self-taught in music, he began his career as organist in Dublin, in 1877. The following year, after a few lessons from Sir R. Stewart, he became organist of the Pro-Cathedral in Belfast. In 1882 he was called to Thurles Cathedral, and also became professor of music at the Jesuit College in Tullabeg. From 1890-94 he was professor of music and classical languages at St. Wilfred's College, Staffordshire. In 1895 he was elected organist of the Cathedral at Enniscorthy, a position which he filled with distinction until his death. He wrote *History of Irish Music* (1895), *Story of the Harp* (1905), *Story of the Bagpipe* (1911), *Memoir of W. V. Wallace* (1912), and also *John Field, Inventor of the Nocturne* (1920).

FLOODS. The year 1928, as was expected, witnessed the prompt proposal of measures of relief for the two great areas subjected to flood in 1927. The Mississippi plans were actually under way with an appropriation of \$325,000,000. At the close of the year, an ingenious scheme was submitted for meeting the Vermont problem which promised a large measure of security from a repetition of this disaster. Few remarkable floods were experienced during the year, perhaps the most notable being the London experience which exceeded by 11 inches any flood in the 265 years of such records.

MISSISSIPPI RIVER FLOOD CONTROL. Following the disastrous flood of 1927, plans were proposed both by the Mississippi River Commission and by the Chief of Engineers of the Army. As far as physical characteristics were concerned, the reports differed but little, whereas in estimate of cost the former was \$775,000,000 while the latter was only \$296,400,000. The principal differences were in allowance for higher and more extensive levees, etc., and in an estimate for damages for private property taken for the work and for which the Army Engineers made no allowance.

Throughout the year Mississippi Flood Control continued to be discussed by engineers and others. Engineers in general confined their statements to the need for careful consideration of the problem rather than any quick acceptance of plans, and to urging civilian engineering representation on the flood commission, instead of leaving the matter entirely in the hands of government and military engineers. There was also much discussion as to whether the work should be paid for by the Federal Government or by the States immediately concerned.

The Mississippi problem was probably not only the greatest engineering work ever faced by any nation, involving as it does 31 States and 20,000 square miles of territory, but it was an extremely difficult and complicated problem. While the levees already built had prevented much of the former inundations due to ordinary floods, the flood of 1927, the greatest on record, made it clear that they do not provide a sufficient channel, a large enough cross-section, to carry off the highest floods. Some twenty major crevasses or breaks in the levees occurred during the 1927 flood and many square miles were inundated.

Widening the main river channel to peak load capacity is out of the question financially, due to the fact that to move the levees back a few miles would involve taking the most valuable

river lands and would also require great and costly works. Such a plan would leave normal flow to clog with silt and deposit a channel which would be seldom full. Storage reservoirs may offer a means of reducing the peak-flood discharge of some of the five tributaries of the great river, but all plans so far proposed are based on providing what may be termed flood relief channels outside the present channel as defined by existing banks or levees. In this way normal floods will be kept within present channel lines while floods requiring additional channel section will be spilled into relief channels. The need for careful studies to determine flood possibilities from various combinations of floods from the tributaries of the river, economic considerations as regards the conditions in the various territories to be benefited, and the selection of locations so as to conserve the areas of greatest economic value make the problem very complicated and in addition there is always present the question of the reduction of the capacity of the channel in the course of time by silting, exact data on which are lacking. It would appear that the main plan must, as already noted, involve deliberately restoring the natural floodway of the Tensas and Atchafalaya rivers as a means of flood relief.

Final action was taken when President Coolidge signed the Jones-Reid Bill on May 15, providing for flood relief and carrying an appropriation of \$325,000,000. The work will be prosecuted by the Mississippi River Commission under the direction of the Secretary of War and Chief of Engineers. While in general the plan proposed by the Chief of Engineers was adopted, a special committee consisting of the Chief of Engineers, the President of the Mississippi River Commission, and a civilian engineer, was appointed to consider the different reports and to recommend action to the President, who was given authority to decide the matter. The work includes the section from the Head of the Passes at the delta to Cape Girardeau, Missouri. The bill stated that the States having spent large sums in providing previous levee constructions which failed, the cost of the new work would be met by the Federal Government. Thus a new era of Federal activity in the field of flood prevention was inaugurated.

While General Jadwin was Chief of Engineers and C. W. Sturtevant was appointed as civilian engineer to the board of review, the president of the Mississippi River Commission, Colonel Potter, who was, of course, thoroughly familiar with the plans of that commission, was abruptly retired on June 11, and Col. T. H. Jackson of the Engineer Corps was appointed to succeed him. This action aroused much unfavorable comment. Gen. Potter's advice was considered of vital importance, but his sudden death on August 6 ended the controversy.

VERMONT FLOOD RELIEF. In order to prevent a recurrence of the Vermont Flood of 1927 (see 1927 YEAR BOOK), causing the loss of 84 lives and over \$30,000,000 damage, it was proposed to construct storage reservoirs which will serve the dual purpose of power storage and flood retention. A committee appointed by the governor in March, 1928, submitted plans for five water-sheds—the White, Winoski, Lamaille, Missisquoi, and Passumpsic—and recommends that the study of this plan be continued to cover all rivers within the State.

Briefly, the commission pointed out that the financial situation in Vermont was such that reservoirs for flood retention alone, such as were used in the Miami works in Ohio, are economically impossible. On the other hand estimates are given showing that reservoirs for power purposes can be built to supply, for the five rivers mentioned, some 280,000 horse power—far beyond any present market needs. The experience on the Deerfield River in 1927 showed that such reservoirs, usually at low level in the fall when floods occur and hence capable of storing considerable flood flow, were a very effective means of reducing flood discharge. The removal of a number of encroachments which obstruct river channels also was recommended and it was especially noted that the reservoirs must be under competent control and operation as spring floods are not infrequent and, should a flood occur with reservoirs full, the effect of storage in reducing the maximum flood rate would be lost.

LONDON FLOOD. A tidal wave or bore in the Thames Estuary was generally accepted as the cause of a flood which broke over the Thames Embankment at London and did considerable damage as well as caused some loss of life on January 6-7, 1928. This was the first time such a bore had ever been recorded at London and was the highest water level ever recorded. A barrage across the Thames below the city, which would have prevented such a disaster, was dismissed in 1906 as impractical and some additions to the embankment probably would be made.

THE SACRAMENTO VALLEY FLOOD OF MARCH, 1928. Heavy rains during March 23-27 over the watersheds of the Sacramento River and its tributaries, especially the American River Basin, resulted in rapid rises of the rivers of the region, followed by widespread floods. On the 25th the unprecedented stage of 40 feet was reported from the junction of the middle and north forks of the American, while at Folsom the American crested at 26.8 feet, equalling the record of March, 1907; North Sacramento became inundated on March 25, and on the 26th the river at Sacramento crested only one-tenth foot below the highest stage ever recorded since the great floods of 1862; by the 26th, large areas of cultivated land in the Sacramento Valley were under water.

The floods in the Sacramento River and in some of the Feather-Yuba sections did not equal those of March, 1907, and January, 1909; and those in the Mokelumne-Cosumnes were far less serious than the San Joaquin Valley floods of 1911; but the American rose higher than since 1862. All streams had fallen to safe stages by March 29.

The floods would have been far more destructive than they were except that there was no snow in the mountains save at extreme altitudes, and even there it was less than normal; in fact, this was the first destructive flood known to occur in the central valleys of California to which snow water did not largely contribute. The damage at North Sacramento was over \$100,000; the levees protecting Sacramento held, and no overflow took place there. The total damage caused by these floods is estimated to have been nearly \$740,000.

OTHER FLOODS OF 1928. As a result of the unusually heavy rainfall in June east of the

100th meridian, floods occurred over most of the eastern United States except New England and the Middle Atlantic States; they were mostly moderate, but the aggregate damage was large, particularly to prospective crops, while those in Missouri, Arkansas, and Oklahoma were quite severe, especially on the St. Francis River.

The rise of 1928 in the Mississippi River reached its maximum in July, with stages at several points exceeding previous records for so late in the season. Owing to the advanced state of crops, losses from overflow were very high, the total reported (in all likelihood incomplete) amounting to \$7,820,000. This included losses in the St. Francis Basin, parallel to the Mississippi in northeastern Arkansas, where the flood, already high from the rains of June, was considerably augmented by backwater from the Mississippi.

Heavy rains over the eastern and southeastern United States in August and September, occasioned by tropical storms, led to a number of remarkably severe floods, with high stages and great destruction, particularly in the Carolinas and in Georgia. The flood in the Altamaha system of Georgia was especially severe; on August 17, the Savannah River at Augusta, Ga.; reached the highest stage of record; and records were similarly broken during September at Elizabethtown, N. C., and at Conway, Mars Bluff, and Kingstree, S. C. The total damage reported reached nearly \$8,500,000.

Severe floods, particularly damaging to crops, occurred on two occasions in Kansas during 1928—the first, following the heavy rains of late July and early August, in the Smoky Hill, Solomon, and Saline basins; and the second as part of the more extensive mid-west floods of November. In the latter, the States of Missouri and Arkansas also suffered to some extent, though not so heavily as Kansas. The November rises resulted in losses of between two and three million dollars—principally in bridges, highways, and matured crops and eight lives were lost in Kansas.

In addition, the usual number of minor floods took place during the year.

LOSSES BY FLOOD IN THE UNITED STATES—1928

<i>Drainage</i>	<i>Reported losses ^a</i>	<i>Lives</i>
Atlantic	\$10,459,688	5
Gulf (except Mississippi River)	2,532,000	5
Mississippi (except Ohio River)	20,507,525	8
Ohio	9,579,150	4
Great Lakes	2,500	
Pacific	1,132,351	1
Total	\$44,167,214	23

^a Probably about 75 per cent of actual.

FLORIDA. POPULATION. A State census was taken in 1925. The result showed a total population of 1,263,549, compared with 968,470 by the fourteenth United States census of 1920, an increase of 295,079 in the five-year period. The estimated population of the State on July 1, 1928, was 1,411,000. The capital is Tallahassee.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Corn	1928	607,000	7,491,000	\$7,891,000
	1927	573,000	7,449,000	7,226,000
Potatoes	1928	31,000	3,875,000	5,812,000
	1927	29,000	3,045,000	5,633,000
Sweet potatoes	1928	28,000	2,464,000	2,834,000
	1927	29,000	2,668,000	2,268,000
Cotton	1928	101,000	20,000 ^a	1,790,000
	1927	67,000	17,000 ^a	1,624,000
Tobacco	1928	12,000	9,221,000 ^b	2,687,000
	1927	8,800	8,228,000 ^b	2,865,000
Hay	1928	92,000	67,000 ^c	1,261,000
	1927	99,000	67,000 ^c	1,209,000
Peanuts	1928	44,000	25,300,000 ^d	1,068,000
	1927	44,000	28,160,000 ^d	1,042,000
Oranges	1928	.....	12,000,000 ^d	25,800,000
	1927	.....	8,200,000 ^d	32,800,000
Grapefruit	1928	.....	8,000,000 ^d	20,400,000
	1927	.....	7,200,000 ^d	22,320,000

^a bales, ^b pounds, ^c tons, ^d boxes.

MINERAL PRODUCTION. The output of phosphate rock, forming somewhat less than one-half of the entire mineral production of the State, was slightly less in 1926 than in the year previous, being 2,708,207 long tons in 1926, as against 2,929,964 in 1925; in value, \$8,683,508 for 1926 and for 1925 \$8,789,070. Florida continued to produce much the greater part of the phosphate rock of domestic origin. Stone production rose again sharply to 6,785,430 short tons in 1926, from 4,026,790 in 1925; in value, to \$7,411,506 for 1926, from \$4,687,107 for 1925. Sand and gravel were produced in 1926 to a total of \$1,483,757. Production of clay and clay products increased. Among the minor minerals titanium ores and zircon were actively produced. The mineral production of the State totaled, for 1926, \$19,700,522; for 1925, \$16,625,699.

FINANCE. Expenditures in the year ended June 30, 1927, as reported by the United States Department of Commerce, were: for maintenance and operation of governmental departments, \$14,210,985 (of which \$1,372,698 was aid to local education); for interest on debt, \$566,149; for permanent improvements, \$23,041,662; total, \$37,818,796 (of which \$22,252,223 was for highways, \$2,696,272 being for maintenance and \$19,555,951 for construction). Revenues were \$27,390,541. From property and special taxes, 20.9 per cent was derived; from departmental earnings and payments for officials' services, 7.9 per cent; from sale of licenses and from gasoline taxes, 57.7 per cent. Property valuation was \$786,054,528; State taxes levied thereon were \$5,926,584. Net State debt was nil, but the State was under contingent liability of \$10,250,000 for debts of the Everglades drainage district.

TRANSPORTATION. The total mileage of railroad line under operation on Jan. 1, 1928, was 5707.97. There were built in 1928, 25.40 miles of additional first track.

EDUCATION. A constitutional amendment, proposed in 1927, to abolish the limitation of millage tax rates for school purposes was brought before the voters of the State on Nov. 6, 1928, for their approval, and in accordance with the vote, the maximum tax limit as applying to the special-tax school districts was removed. A report on the educational survey of the State made in 1927-28 was published late in the year. The school-age population of the State, for the academic year 1926-27, was given as 469,416. There were enrolled in the public schools in that year 370,729 pupils; 332,396 being in elementary and 38,333 in high-school grades. Ex-

penditures for public school education in the State totaled \$37,918,357.92. Salaries of teachers averaged \$123.60 a month.

CHARITIES AND CORRECTIONS. Institutions of the State devoted to the care or custody of persons were not under centralized control of a single State administrative body in 1928. They included a prison farm, State hospital, industrial schools for boys and for girls, respectively, a farm colony for the feeble-minded and epileptic, and a school for the deaf and the blind. The Farm Colony for the Epileptic and Feeble-Minded had on Jan. 1, 1928, 311 patients, their number being 22.4 to the 100,000 of the estimated population of the State.

POLITICAL AND OTHER EVENTS. The Tamiami Trail, a hard-surfaced motor highway 30 feet broad running through the Everglades from Tampa to Miami, was formally opened April 25, as a toll-free thoroughfare. In traversing the Everglades, where serious road-building difficulties were overcome, it opened up a large body of previously inaccessible marsh land to drainage and agricultural development. Its opening completed a belt of highway encircling the entire State. The Overseas Highway, a road between Miami and Key West, was opened on March 3. Pensacola became the terminus of a railroad route from Kansas City opened by the St. Louis and San Francisco system in June. Experiments with the cultivation of sugar cane, conducted by the Dahlberg interests at Clewiston on the south shore of Lake Okeechobee for three years, were reported in March to have produced satisfactory yields of a cane higher in sucrose content than that of Louisiana or of Cuba, the yield running as high as 60 or 80 tons of cane to the acre. Some 7000 acres were reported as under preparation for additional planting. The Florida Supreme Court in February declared invalid an act of the legislature of 1927 providing for an issue of bonds for the State purchase of the Connors Highway across the Everglades. Governor Martin's plan to finance drainage of the Everglades by the issue of \$20,000,000 of bonds to be issued under an act of 1927 by the Everglades Drainage District was upheld on March 27, by the State Supreme Court, but other litigation against the plan developed, and the proposed issue of bonds was postponed. The correction of the situation left by the cessation of the real estate speculations of 1926 continued during the year. A temporary default on certain of the obligations of the City of Lake Worth was reported in February. Banks with an important total of deposits closed at West Palm Beach in June; a large building association closed at Miami in January, involving three banks in that city. A memorial tablet to Pedro Mendez, offered by the State of Florida, was dedicated at Aviles, Spain, in July.

The West Indian hurricane of September 12-14 passed into southern Florida, where it occasioned the most severe calamity of the year within the continental United States, in respect of loss of life. The waters of Lake Okeechobee were swept over neighboring settled lowland, notably in the vicinity of Pelican Bay. Estimates of the local Red Cross organization placed the total hurricane mortality in the State at about 2300; the greater number of the victims were drowned in the Okeechobee area. Damage to the growing citrus crops was severe. In other

respects the material damage done was less than that occasioned by the hurricane of 1926. The American Red Cross administered relief in the stricken region.

ELECTION. The State rendered a majority of considerable proportions in the popular election of November 6 for the Republican National candidates, Hoover and Curtis. The popular presidential vote as officially reported was: Hoover (Rep.), 144,168; Smith (Dem.), 101,764. Florida in consequence named six Republican electors, this being the first occasion since 1876 on which the State had elected a block of Republican electors. Several members of the State delegation at the Democratic National Convention bolted the party nominee, Gov. Alfred E. Smith and campaigned against him. Organizations of what were known as Hoover Democrats were active in the State in the campaign, urging the defeat of Smith and the support of the Democratic State ticket. Doyle E. Carlton, the Democratic nominee, was elected governor, leading his opponent, the Republican candidate, William J. Howey, by a somewhat greater plurality than that for Hoover. United States Senator Park Trammell, Democrat, was reelected, and four Democrats were sent to the House of Representatives, three being the incumbents and the fourth, Mrs. Ruth Bryan Owen, daughter of William Jennings Bryan. Howey, the Republican candidate for Governor, obtained votes enough to win his party the right, which it had not previously held under the State election law, to hold a primary election in the next following governorship year.

OFFICERS. Governor, John W. Martin; Secretary of State, H. Clay Crawford; Treasurer, W. V. Knott; Attorney-General, Fred H. Davis; Comptroller, Ernest Amos; Superintendent of Public Instruction, W. S. Cawthon; Commissioner of Agriculture, Nathan Mayo.

JUDICIARY. Supreme Court: W. H. Ellis, Chief Justice; Associate Justices, James B. Whitfield, Armstead Brown, Glenn Terrell, Rivers H. Buford, L. W. Strum.

FLORIDA, UNIVERSITY OF. A State institution of higher education for men, at Gainesville, Florida; founded in 1905. In the autumn of 1928 the total registration totaled 2155, distributed as follows: Arts and sciences, 586; commerce and journalism, 373; engineering and architecture, 341; teachers, 315; law, 252; agriculture, 151; graduate, 82; and pharmacy, 62. The summer school session of 1928 had a registration of 1683 men and women. The faculty in the autumn of 1928 numbered 150 (exclusive of student assistants and research men). The financial condition was as follows: Operat-

ing and maintenance, \$789,122; and annual endowment, \$10,000. The library contained 59,122 volumes. A dormitory with 179 rooms was under construction at a cost of \$150,000. John James Tigert, LL.D., United States Commissioner of Education, resigned on September 1, 1928, to become president of the University of Florida, to succeed Albert Alexander Murphree, LL.D., who died suddenly in December, 1927.

FLOTATION, PROCESS OF CONCENTRATION. See **METALLURGY**.

FLOTILLA LEADER. (Same as **DESTROYER LEADER**.) See **NAVAL PROGRESS**.

FLUE DUST. See **CHEMISTRY, INDUSTRIAL**.
FLYING, FLYING BOATS, ETC. See **AERONAUTICS**.

FOG SIGNALS. See **LIGHTHOUSES**.

FOLGER, WILLIAM MAYHEW. Rear admiral, United States Navy, retired, died at Cornish, N. H., July 23. He was born at Massillon, Ohio, May 19, 1844, and was graduated from the United States Naval Academy in 1864. He saw service in the closing months of the Civil War, in the Union navy. After serving in the various lower grades he became captain in 1898 and rear admiral in 1904. His commands included the *Quinnebaug* (1887-88), the *Yorktown* (1894-95), the *New Orleans* (1898-99), and the *Kearsarge* (1900-01). He was inspector of ordnance at the Washington Navy Yard, 1888-90, chief of the Bureau of Ordnance, with the rank of commodore, 1890-93, and lighthouse inspector, 1896-98 and 1901-04. He also commanded the Philippine squadron in 1898, and until 1905 the cruiser squadron of the Asiatic fleet. He commanded the Asiatic fleet at the time of his retirement in 1905.

FOLKLORE. See **PHILOLOGY, MODERN**.

FOOD AND NUTRITION. FOOD PRICES.

United States. The index number for wholesale prices of food reported by the Bureau of Labor Statistics, U. S. Department of Labor (*Mo. Labor Rev.*, vol. 27, p. 236) was 106.9 for September and 102.3 for October, 1928, an appreciable increase over the corresponding figures of 96.5 and 100 for 1927 (1926 = 100). *Bradstreet's* food index number based on the wholesale prices per pound of 31 articles for food was \$3.29 for the week ended December 22, as compared with \$3.30 for the preceding week, and \$3.38 for the week ended Dec. 24, 1927. Combined retail food prices as shown by the Bureau of Labor Statistics' logarithmic curve of monthly prices of 43 articles of food were slightly lower than for corresponding periods of 1927 through July. The August and September figures were higher and the October value practically the same as the corresponding 1927 figures. Of the

INDEX NUMBERS OF RETAIL FOOD PRICES IN PRINCIPAL COUNTRIES

[Pre-war = 100]
European Countries

<i>Year and month</i>	<i>Austria (Vienna)</i>	<i>Belgium^b</i>	<i>Bulgaria</i>	<i>England^c</i>	<i>France (Paris)</i>	<i>Germany</i>	<i>Italy (Milan)</i>	<i>Netherlands</i>	<i>Norway</i>
1927, Oct.	120	210	2,626	161	520	152	509	146	173
1928, Oct.	120 ^a	215	2,682 ^a	157	111 ^a	152	138 ^a	148	163

European Countries (continued)

<i>Year and month</i>	<i>Russia^c</i>	<i>Switzerland</i>	<i>United States (51 cities)</i>	<i>Canada^c</i>	<i>Australia</i>	<i>India (Bombay)</i>	<i>New Zealand</i>	<i>South Africa</i>
1927, Oct.	198	158	153	148	159	148	145	119
1928, Oct.	211	157 ^a	153	152	149	142	147 ^a	115

^a September 15.
^b 1921 = 100.

^c First of month figure.
^a Revised on a gold basis.

^c August 15.

individual food items, increases of 1 per cent or more on October 15 as compared with October 15, 1927, were shown for 17, and decreases for 19, of the individual food items. Increases in the retail prices of the five cuts of beef included in the list varied from 15 per cent for sirloin steak and rib roast to 32 per cent for plate beef. In contrast with this, there was a 9 per cent decrease in pork chops and 3 per cent in bacon. Other items showing a considerable increase were oranges, 11, onions, 22, and navy beans, 30, per cent. The principal decrease was one of 27 per cent in potatoes.

OTHER COUNTRIES. The general trend of retail food prices throughout the world may be seen from the accompanying table compiled from data reported in the *Federal Reserve Bulletin* of December, 1928 (p. 859). The index numbers, shown on the preceding page, which have been constructed by the various foreign statistical offices, are based on the prices of a number of articles of food weighed according to different standards, but unless otherwise noted referable to the original pre-war basis of 100.

NUTRITION INVESTIGATIONS. Factors affecting basal metabolism. The nutrition laboratory of the Carnegie Institution, Boston, continuing its extensive programme of metabolism research, published during the year a number of important papers. Supplementing normal basal metabolism data published in 1919, Benedict (*Am. J. Physiol.*, vol. 85, p. 607) reported additional data for 27 men from 21 to 89 years of age and 33 women from 18 to 58 years of age. The data showed lower averages for both men and women than those of the earlier series. The greatest discrepancies from the various standards were found in individuals of unusual configuration, suggesting the need for great care in the interpretation of basal metabolism findings for determining medical or surgical treatment in subjects of unusual shape or size. The metabolism of the oldest male subject, a well-known surgeon in excellent physical and mental health, was much higher than the predictions for his age, suggesting a relationship between extraordinary physical well-being and super-normal metabolism. In another paper, Benedict (*Am. J. Physiol.*, vol. 85, p. 650) reported basal metabolism data for four subjects over periods of many years, showing a gradual decrease in metabolism with advancing age.

Monthly observations for over a year by Gustafson and Benedict (*Am. J. Physiol.*, vol. 86, p. 43) of the basal metabolism of a group of Wellesley College students showed a tendency toward low values in winter, followed by a rise to higher levels during the spring and summer. The month to month variations in the same subjects were considerable.

The possible effect upon basal metabolism of a summer vacation was investigated by Benedict and Finn (*Am. J. Physiol.*, vol. 85, p. 665) through basal metabolism determinations on members of the staff of the nutrition laboratory before and after the summer vacation of one month. Contrary to what might be expected, there was no appreciable difference in metabolism before or after vacation in all but two of the 20 individuals studied.

A greatly simplified form of portable respiration apparatus was developed by Benedict (*Bos-*

ton Med. Surg. J. vol. 197, p. 1161) for use in an extensive investigation of racial metabolism in various parts of the world. With the use of this type of apparatus, Steggerda and Benedict (*Am. J. Physiol.*, vol. 85, p. 621) found the basal metabolism of brown and black subjects in Jamaica, British West Indies, to be very close to, although slightly below, the prediction standards for white subjects of corresponding age, weight, and height in temperate zones, thus suggesting the probability that the climate and diet in this place has no appreciable effect upon heat production.

A more extensive series of measurements on male Mayas, workers in the archaeological excavations at Chichen Itzá, Yucatan, and on white members of the expedition before, during, and after a short stay at Yucatan, was reported by Williams and Benedict (*Am. J. Physiol.*, vol. 85, p. 634). The measurements on the white subjects showed that the subtropical climate had not affected their metabolism. The average basal metabolism of the native subjects was 5.2 per cent above the standards for white subjects. The high values were considered of particular significance inasmuch as there had been a tendency to associate definitely low metabolism of various races with racial inferiority. This would appear unwarranted inasmuch as the civilization of the Mayas is low in comparison with that of Orientals whose basal metabolism is low.

NUTRITION AND GROWTH OF CHILDREN. A comparison by Orr (*Brit. Med. J.* No. 3499, p. 140) of the relative value of whole milk, separated milk, and crackers as supplementary school lunches as shown by the growth records for 7 months of groups of children from 5 to 14 years old in seven cities and large towns in Scotland and Ireland showed no benefit from the crackers, but marked increase in growth and noticeable improvement in the general condition of the children in the groups receiving either whole milk or separated milk. The beneficial results with separated milk were considered of special interest.

A study by Davies (*Mass. Agr. Expt. Sta. Bull.*, 241) of the dietary habits and nutritional status of elementary rural-school children in two sections of Massachusetts revealed the fact that the teeth of the children in the dairy-farming section where the milk consumption was relatively high were in much better condition than of those in the cranberry-growing section where the milk consumption was low but the consumption of fresh fruit and vegetables higher than in the other section.

The careful supervision of the diet of diabetic children in connection with insulin therapy afforded the opportunity to study the growth and nutritive condition of children under favorable dietary management. A study by Boyd and Nelson at the State University of Iowa College of Medicine (*Am. J. Diseases Children*, vol. 35, p. 753) of the height and weight gains for periods of from 3 months to 4½ years of 32 diabetic children showed the growth response of these children to be greater than that of the so-called superior groups of non-diabetic children under less careful dietary supervision. Moreover, Boyd and Drain (*J. Am. Med. Assoc.* vol. 90, p. 1867)

found that all of the 28 children who had been under dietary treatment for 6 months or more showed arrested caries, although before the dietary treatment began the caries was definitely progressive. These findings were considered of significance in indicating the dependence of dental caries in children on recent dietary inadequacies and the possibility of checking or preventing caries by adequate diets such as followed in the dietary control of diabetes.

As a part of a long-continued investigation at the Nelson Morris Memorial Institute for Medical Research of the Michael Reese Hospital, Chicago, to determine whether occasional failures to gain in special nutrition work with undernourished children are due to metabolic abnormalities, Wang, Kaucher, and Frank (*Am. J. Diseases Children*, vol. 35, p. 856) compared the calcium metabolism of 10 normal and 50 undernourished children from 4 to 13 years of age, but found no appreciable differences between the groups. A similar comparison by Wang, Hawks, and Hays (*Am. J. Diseases Children*, vol. 35, p. 968) of the protein metabolism of normal and undernourished children led to the conclusion that the undernourished child is able to absorb and store nitrogen at a rate equal to or greater than the normal child of the same weight and that consequently the protein requirement for such children should be calculated in terms of the standard weight for age of the child rather than its actual weight.

NUTRITIONAL ANÆMIAS. At the Wisconsin Agricultural Experiment Station, the important discovery was made that, for the proper functioning of iron in hemoglobin formation and the prevention or cure of secondary anemia, traces of copper are necessary. Earlier studies by Hart *et al.* (*J. Biol. Chem.*, vol. 65, p. 67) had shown that, in rabbits rendered anemic by a whole-milk diet, an inorganic source of iron such as ferric oxide was incapable of curing the anemia by itself, but was very effective when supplemented by fresh cabbage or corn meal or iron-free extracts of these materials. This suggested the possibility that some factor other than iron is needed for hemoglobin formation. As all of the known factors except vitamin E could be ruled out, lettuce, a good source of this vitamin, was tested (*J. Biol. Chem.*, vol. 72, p. 299) with favorable results. However, the ash of lettuce was equally effective, showing that the unknown factor must be inorganic. The clue to its identity was found in the observation (*J. Biol. Chem.*, vol. 77, p. 797) that extracts of the ashed material had a slight bluish tinge suggesting copper.

Following this clue, the Wisconsin workers were able to cure nutritional anemia in rats by the simple addition to the whole-milk diet on which the anemia had been induced, of 0.5 mg. daily of iron as ferric chloride and as small an amount as 0.05 mg. of copper as copper sulphate. This discovery received unfortunate newspaper publicity and copper was widely heralded as the cure for any kind of anemia in spite of the fact that no claim was made for it except as a supplement to iron in the type of experimental anemia caused by an exclusive milk diet. Whipple and co-workers, using dogs in which severe anemia had been produced by repeated bleedings, also reported favorable results in the feeding of inorganic ash of various food materials including liver, kidney, and apri-

cots (*J. Biol. Chem.*, vol. 79, p. 563), all of which contain both copper and iron, but in the use of copper and iron salts (*J. Biol. Chem.*, vol. 79, p. 577) did not invariably get better results with the combination of the two than with iron alone. They were of the opinion that in the type of anemia with which they were working a group of substances was responsible for the increased hemoglobin production.

Additional evidence of the specificity of liver and liver extracts in the treatment of pernicious anemia was presented in a symposium on anemias at the annual meeting of the American Medical Association at Minneapolis, Minn., June 13, 1928. Middleton (*J. Amer. Med. Assoc.*, vol. 91, p. 859) reporting on the treatment of 40 cases of secondary anemia with Minot-Murphy liver diet, stated that although 14 responded favorably, it was demonstrated that the response was not due to the specific factor in the liver. Solutions of iron and copper salts in amounts equivalent to what would be contained in a 24-hour dosage of liver extract were without effect in two cases of pernicious anemia. Middleton urged that the indiscriminate use of liver for all types of anemia be discouraged in order to conserve the supply for patients with pernicious anemia.

VITAMINS. Vitamin A and infection. Studies reported from various laboratories strengthened the opinion that the absence of vitamin A leads to the breaking down of epithelial tissues throughout the body, with a resulting decrease in resistance to infection. The characteristic eye infection long thought to be the chief pathological symptom of vitamin A deficiency was shown by Green and Mellanby (*Brit. Med. J.*, 1928, No. 3537, p. 691) to be of less frequent occurrence in rats than abscesses at the base of the tongue, while pyogenic infections of the alimentary tract, kidney, and bladder and stones in the bladder were of frequent occurrence. They suggested that the term "anti-infective" might well be applied to vitamin A, lack of which in their opinion may be the cause of some of the common inflammatory and suppurative processes found in man.

Vitamins F (B_1) and G (B_2). No uniformity was reached during the year concerning the nomenclature of the two separate vitamins now known to be present in what was formerly called vitamin B. British scientists applied the term B_1 to the antineuritic vitamin, and B_2 to the relatively heat-stable vitamin sometimes known as the antipellagra vitamin. In the United States an increasing tendency was shown to use F and G for these two factors, respectively. Salmon, Guarrant, and Hays continued their attempts to obtain pure fractions of each of these (*J. Biol. Chem.*, vol. 73, p. 787) and with the help of these fractions made an elaborate study of the etiology of experimental pellagra in rats (*J. Infect. Diseases*, vol. 43, p. 426). They were able not only to demonstrate in rats on a diet lacking only the heat-stable vitamin G a condition resembling human pellagra in the bilateral symmetry of the skin lesions but also to isolate from the external and internal lesions a microorganism which, while nonpathogenic under ordinary conditions, produced the characteristic pellagra-like condition when fed in massive doses. The protective factor brought about a rapid cure in these animals and was also able to inhibit the growth of the organism in culture

medium. This would suggest that the pellagra-like condition in rats is not the result of a dietary deficiency alone, but that in the absence of the protective factor the body loses its resistance to a comparatively nonpathogenic organism. Findlay (*J. Path. Bact.*, vol. 31, p. 353) and Chick and Roscoe (*Biochem. J.*, vol. 22, p. 790) also described a pellagra-like condition induced in rats by diets deficient in the heat-stable factor of vitamin B.

Vitamin D. Interest in irradiation and the use of irradiated ergosterol in the prevention and cure of rickets continued. Hess and Lewis (*J. Am. Med. Assoc.*, vol. 91, p. 783) reported unflinching success in the cure of rickets with irradiated ergosterol and suggested that its action on calcium metabolism may be of the nature of a stimulant for the parathyroid gland. In their opinion there had not been sufficient clinical evidence to define the proper dosage, but the doses that were reported to be harmful were at least 10,000 times the normal curative dose.

That window glass capable of transmitting the effective light rays may not be a practical means to employ for the prevention and cure of rickets was shown by Coblenz (*Trans. Illum. Engin. Soc.*, vol. 23, p. 247) and Clark (*Science*, vol. 68, p. 165). The former, reporting data obtained at the U. S. Bureau of Standards on the transmissibility of various light sources, expressed the opinion that the installation of special glass in private homes and offices was an unwarranted expense. Clark stated that any child going out for recess or any stenographer going out to lunch would get more ultra-violet radiation than could be obtained all day behind a window of ultra-violet transmitting glass.

BIBLIOGRAPHY. Important books of the year were: W. H. Eddy, *Nutrition* (Baltimore); M. Fishbein et al., *Your Weight and How to Control It* (New York); L. F. Cooper, E. M. Barber, and H. S. Mitchell, *Nutrition in Health and Disease for Nurses* (Philadelphia); E. G. Halliday and I. T. Noble, *How and Whys of Cooking* (Chicago); G. Lusk, *The Elements of the Science of Nutrition* (4th ed., Philadelphia); and C. O. Swanson, *Wheat Flour and Diet* (New York).

FOOT AND MOUTH DISEASE. See VETERINARY MEDICINE.

FOOTBALL. Football again in 1928 gave most convincing proof that it was preëminent among college sports. It was estimated that some 35,000,000 persons attended the various college and school games throughout the United States, the enthusiasm being of the same high calibre in every section. More than 88,000 witnessed the battle between the United States Military Academy and Stanford University at the Yankee Stadium, New York City, on December 1. Nearly 90,000 saw the contest between Stanford and the University of California on the Pacific coast. Crowds of 70,000 and 80,000 were fairly common at games played by the various Conference colleges of the Mid-West. The big games of the South and Southwest drew from 35,000 to 40,000 spectators. Probably \$60,000,000 was realized in gate receipts during the season.

The selection of a championship college eleven is, of course, an impossibility as the schedule of each is so arranged that one, or at the most two games, afford the season's goal. In other words, certain rivals are "pointed" for by the coaches and trainers. There is no doubt, how-

ever, that the University of Southern California had one of the most perfect gridiron machines in the college world. The "Trojans," as they were called, played through an exceptionally severe schedule without suffering defeat, the only blot on their record having been a scoreless tie with the University of California. Among the Eastern elevens of note were United States Military Academy, New York University, Carnegie Institute of Technology, Pennsylvania, Boston College, and Villanova. In the South, Georgia Institute of Technology and Tennessee held sway, while in the Southwest, Texas University and Southern Methodist stood out. Illinois won the mid-West Conference for the second year in succession and rated, along with Wisconsin, as an eleven of unusual strength.

A summary of the games played by the leading colleges follows:

Southern California 40, Utah Aggies 12; Southern California 19, Oregon State 0; Southern California 19, St. Mary's 6; Southern California 0, California 0; Southern California 19, Occidental 0; Southern California 10, Stanford 0; Southern California 78, Arizona 7; Southern California 27, Washington State 13; Southern California 28, Idaho 7; Southern California 27, Notre Dame 14.

U. S. Military Academy (Army) 35, Boston University 0; Army 14, Southern Methodist 13; Army 44, Providence 0; Army 15, Harvard 0; Army 18, Yale 6; Army 88, De Pauw 12; Army 6, Notre Dame 12; Army 32, Carleton 7; Army 13, Nebraska 3; Army 0, Stanford 26.

New York University 21, Niagara 0; New York University 26, West Virginia Wesleyan 7; New York University 34, Fordham 7; New York University 48, Rutgers 0; New York University 47, Colgate 6; New York University 2, Georgetown 7; New York University 71, Alfred 0; New York University 27, Missouri 6; New York University 27, Carnegie Tech. 13; New York University 13, Oregon State 25.

Carnegie Tech. 32, Westminster 6; Carnegie Tech. 65; Ashland 0; Carnegie Tech. 45, Thiel 13; Carnegie Tech. 19, Washington and Jefferson 0; Carnegie Tech. 6, Pittsburgh 0; Carnegie Tech. 13, Georgetown 0; Carnegie Tech. 27, Notre Dame 7; Carnegie Tech. 13, New York University 27.

Pennsylvania 34, Ursinus 0; Pennsylvania 46, Franklin and Marshall 0; Pennsylvania 67, Swarthmore 0; Pennsylvania 14, Penn State 0; Pennsylvania 0, Navy 6; Pennsylvania 20, Chicago 13; Pennsylvania 7, Harvard 0; Pennsylvania 20, Chicago 13; Pennsylvania 7, Harvard 0; Pennsylvania 34, Columbia 7; Pennsylvania 49, Cornell 0.

Boston College 38, Catholic University 6; Boston 6, Navy 0; Boston 19, Duke 0; Boston 27, Boston University 0; Boston 60, Manhattan 6; Boston 19, Fordham 7; Boston 24, Canisius 0; Boston 51, Connecticut Aggies 13; Boston 19, Holy Cross 0.

Georgia Tech. 13, Virginia Military Institute 0; Georgia Tech. 12, Tulane 0; Georgia Tech. 13, Notre Dame 0; Georgia Tech. 20, North Carolina 7; Georgia Tech. 32, Oglethorpe 7; Georgia Tech. 19, Vanderbilt 7; Georgia Tech. 33, Alabama 13; Georgia Tech. 51, Auburn 0; Georgia Tech. 20, Georgia University 6.

Tennessee 41, Maryville 0; Tennessee 41, Centre 7; Tennessee 13, Mississippi 12; Tennessee 15, Alabama 13; Tennessee 26, Washington and Lee 7; Tennessee 57, Carson-Newman 0; Tennessee 37, Sewanee 0; Tennessee 6, Vanderbilt 0; Tennessee 0, Kentucky 0; Tennessee 13, Florida 12.

Texas 32, St. Edward's 0; Texas 12, Texas Tech. 0; Texas 12, Vanderbilt 13; Texas 20, Arkansas 7; Texas 13, Rice 6; Texas 2, Southern Methodist 6; Texas 6, Baylor 0; Texas 6, Texas Christian 0; Texas 19, Texas Aggies 0.

Southern Methodist 33, Denton Normal 0; Southern Methodist 31, Howard Payne 0; Southern Methodist 13, Army 14; Southern Methodist 6, Simmons 0; Southern Methodist 53, Rice 13; Southern Methodist 60, Trinity 7; Southern Methodist 6, Texas 2; Southern Methodist 19, Texas Aggies 19; Southern Methodist 0, Baylor 2; Southern Methodist 6, Texas Christian 15.

Illinois 33, Bradley 6; Illinois 31, Coe 0; Illinois 13, Indiana 7; Illinois 6, Northwestern 0; Illinois 0, Michigan 3; Illinois 14, Butler 0; Illinois 40, Chicago 0; Illinois 8, Ohio State 0.

Wisconsin 22, Notre Dame 0; Wisconsin 13, North Dakota Aggies 0; Wisconsin 19, Purdue 19; Wisconsin 7, Michigan 0; Wisconsin 25, Chicago 0; Wisconsin

15, Alabama 0; Wisconsin 13, Iowa 0; Wisconsin 0, Minnesota 6.

California 22, Santa Clara 0; California 7, St. Mary's 0; California 13, Washington State 3; California 0, Southern California 0; California 13, Oregon 0; California 6, Washington 0; California 60, Nevada 0; California 13, Stanford 13.

Stanford 26, Oregon 12; Stanford 45, Southern California (S. B.) 7; Stanford 47, Idaho 0; Stanford 47, Fresno State 0; Stanford 0, Southern California 10; Stanford 31, Santa Clara 0; Stanford 12, Washington 0; Stanford 13, California 13; Stanford 26, U. S. Military Academy (Army) 0.

Professional football in the United States showed a somewhat larger attendance in 1928 than in previous years, but was still far from being a success financially. The championship was won by the Providence eleven with 8 victories, 1 defeat, and 2 ties. The other teams finished as follows: Frankford won 11, lost 3, tied 2; Detroit won 7, lost 2, tied 3; Green Bay won 6, lost 4, tied 3; Chicago Bears won 7, lost 5, tied 1; Giants won 4, lost 7, tied 2; Yankees won 2, lost 8; Chicago Cardinals won 1, lost 5; Dayton won 0 lost 7.

See SOCCER.

FORD, JAMES LAUREN. American author, editor, and critic, died at Bay Shore, N. Y., February 26. He was born at St. Louis, Mo., July 25, 1854, and received an academic education at Stockbridge, Mass. He moved early to New York City, where he held editorial positions on newspapers and periodicals, acting as editor, dramatic critic, literary critic, or special writer. He was a member of the editorial staff of the New York *Herald* (before its consolidation with the New York *Tribune*) for thirty years. He devoted much of his time and attention to the theatre, and was the author or adapter of two successful plays. His humorous writings were, for the most part, in the form of satirical comments on current tendencies and affections in American literature, drama, and life. His name was associated with the age that produced such American humorists as Marshall P. Wilder, Bill Nye, and John Kendrick Bangs. His writings included: *The Literary Shop and Other Tales* (1894; 3d ed., 1899); *Hypnotic Tales* (1894); *The Third Alarm* (1893; new ed., 1908); *Bohemia Invaded* (1895); *Dr. Dodd's School*; *Dolly Dillenback* (1895); *Cupid and the Footlights* (1899); *The Story of DuBarry* (1902); *The Brazen Calf* (1903); *The Wooing of Folly* (1906); *Waitful Watching* (1916); *Forty-Odd Years in the Literary Shop* (1921) and *Hot Corn Ike* (1923). He also edited, with his sister, Mary K. Ford, *Every Day in the Year* (1902; new ed., 1914), a rhymed epitome of world history.

FORDHAM UNIVERSITY. A Roman Catholic institution for higher education at Fordham, New York City; founded in 1841. It is the largest Catholic educational institution in America, and is under the Society of Jesus. The enrollment for 1928-29 totaled 7859 students, including 1269 in the teachers' college and 506 in the graduate school, and a distribution among the other colleges as follows: Law, 1465; pre-law, 175; college, 1336; business administration, 583; pharmacy, 464; social service, 137; preparatory school, 527. The registration for the summer school of 1928 was 1397. There were 212 faculty members. The endowment fund on June 30, 1928, amounted to \$113,040. There were 100,000 volumes in the library. A new faculty building was completed in November, 1928, which would accommodate 70;

and reconstruction work was done on the University Chapel to increase the seating capacity from 350 to 1200. President, the Rev. William J. Duane, S.J., Ph.D.

FOREIGN EXCHANGE. See FINANCIAL REVIEW.

FOREST DISEASES. See BOTANY.

FOREST FIRES. See FORESTRY.

FORESTRY. Marked by no outstanding event or no unusual conditions, the 1928 forestry year was normal and witnessed satisfactory progress in many directions. Commercial forest interests manifested a spirit of willingness to cooperate fully in the rational utilization and preservation of the forests. The United States Congress passed two highly significant measures—the McSweeney-McNary Law for the support and expansion of research activities, and the McNary-Woodruff Law, looking to increased purchase of forest land for the National forests. Forest fires exacted no abnormal tolls in 1928 and with improved roads and better fire-fighting organization and equipment, the future was conceded hopeful. State and Federal forest nurseries continued to produce increasing numbers of young forest trees for reforestation purposes. With replanting of idle forest lands and with a programme of adequate fire protection, leading foresters proclaimed that the United States can always be largely self-supporting in respect to lumber production.

THE NATIONAL FORESTS. The general interest in increasing the nationally owned forests was effectively crystallized in the important McNary-Woodruff Law, approved by President Coolidge on April 30, 1928, and laying down a financial programme for enlarged purchases of land for national forest purposes and protection of head waters of important rivers. The gross area of the national forests on June 30, 1928, was 184,403,819 acres, of which 24,922,963 was privately owned. The net area was thus 159,480,856 acres, a gain of 680,431 acres during the year. The cash receipts from the national forests during the same period amounted to well over five million dollars, the largest item of which was derived from the sale of timber. A considerable investment in the way of new roads and trails was justified both in the light of making the national forests accessible to the people and in facilitating fire protection. Efforts were continued in consolidating scattered areas, and in exchanging public property for privately owned areas located within the national forests, with a view to simplifying the management of the forests. An important purchase of 23,123 acres in the White Mountains of New Hampshire saved an exceptionally beautiful area from destructive lumbering and added and perpetuated it to public use as a recreational centre.

LUMBER PRODUCTION. Indications of a slight increase in total lumber production in 1928, as compared with that of 1927, was reported in late December, 1928, by the National Lumber Manufacturers Association, of Washington, D. C. This was especially significant in view of the improved manufacturing practices in the various lumber industries, which in themselves have exerted measurable savings in raw materials. Many of the larger lumber companies were planning to replant their various holdings with a view to sustained production. *The Forest Worker*, published by the United States Forest Serv-

ice, reported that one large company, founded in 1888, had marked its fortieth anniversary by adopting plans for keeping its forest lands continuously productive. Sustained production will promote a degree of stability that the lumber business has never enjoyed, making abandoned lumbering towns a relic of the past.

FORESTRY RESEARCH. From the viewpoint of the promotion of forestry research, 1928 was an outstanding year. The McSweeney-McNary Law, approved by President Coolidge on May 22, established and outlined a ten-year programme for forest research, and thus paved the way for an orderly and increasingly effective attack on the large number of important problems. The Secretary of Agriculture, Dr. William M. Jardine, described the McSweeney-McNary Act as "the most important piece of fundamental forestry legislation enacted since the Clarke-McNary Law of 1924." Under its provision the completion and maintenance of a series of 14 forest experiment stations was authorized. Most of these stations were already in operation and were beginning to yield constructive results. In accordance with the policy of locating these new forestry stations near established educational institutions, the recently authorized Allegheny Station was located at Philadelphia where it will work in coöperation with the University of Pennsylvania.

Significant of the spirit of the times, certain privately endowed institutions were actively engaged in forestry research. The Eddy Tree Breeding Station recently established at Placerville, Calif., undertook the breeding of forest trees with a view to developing faster-growing varieties. The New York Botanical Garden coöperated in experiments to develop, by plant breeding, fast-growing forms of poplar as sources of pulpwood. Various large educational institutions, such as Yale and Harvard universities, continued to make substantial contributions to forestry research.

The conservation and economical utilization of lumber and lumber products continued to receive serious consideration. The Forest Products Laboratory of the United States Forest Service developed two devices for quick determination of the moisture content of lumber, thus enabling rapid grading to a uniform degree of dryness. Pulpwood studies showed that aspen, birch, and maple may be cooked together and utilized in manufacturing strong pulps for cheaper paper and board. Furthermore, it was found that much of the sawmill and manufacturing waste may be utilized in preparing pulp.

FORESTRY EDUCATION. The American Forestry Association, assisted by the State forestry organizations of Florida, Georgia, and Mississippi, embarked on an ambitious educational programme to arouse public interest in the preservation and upbuilding of the pine forests of the South which are an important source of naval stores. This project, placed under the direction of W. C. McCormick, a forester with extended Southern experience, is hoped to convince the rural people of the wastefulness of annually burning the woodlands, a practice which not only prevents reproduction but also lowers the yield of the surviving trees.

Pursuing its policy of developing the School of Forestry to maximum usefulness, Yale University decided to grant the degree of doctor of philosophy in forestry. Practical forestry train-

ing received a decided impetus in the completion of a permanent new building at the New York State Ranger School at Wanakena, N. Y. This school, founded in 1913, as a branch of the New York College of Forestry, at Syracuse University, and the first of its kind in the United States, is devoted to the training of field personnel.

FOREST FIRES. According to the *Report of the Forester*, of the United States Department of Agriculture, for the year ended June 30, 1928, the 1928 fire season was unusually satisfactory. Rains in the northern Rocky Mountains and the northern Pacific States materially lessened the customary summer drought period. California again suffered severe losses, despite an earnest effort on the part of Federal and local agencies to keep fires in check. The importance of forest protection was recognized by the establishment of a national forest protection board composed of representatives of the Forest Service, National Park Service, Bureau of Indian Affairs, General Land Office, the Biological Survey, the Weather Bureau, the Bureau of Entomology, and the Bureau of Plant Industry. Coördination of effort has already begun to yield results. Of various modern devices used to report forest fires, the radio was tested to some extent during the year, but was found far from satisfactory due to various difficulties, such as the effect of topography on transmission of code and voice, and the absorption of radio energy by trees. The great cost of constructing telephone lines makes the improvement of radio communication highly desirable.

INSECTS AND DISEASES. Insects not only constituted a direct menace to timber but also indirectly caused serious fire hazards by increasing the dead timber. Serious outbreaks of bark beetles occurred in the Beaverhead National Forest in Montana and in the Modoc National Forest in California. The bark beetle was especially destructive to mature marketable timber. Lesser outbreaks of beetles occurred in National forests in Colorado, Arizona, and Oregon. White pine blister rust was observed for the first time in the national forests of northern Idaho, and brought forward the all-important question of abandoning the important pine timber to its fate or making a systematic campaign to remove the wild currants and gooseberries which serve as alternate host. Since there are approximately one and one-half million acres of valuable timber involved, foresters believed that decisive action should be taken to save the forests. Chestnut blight continued its devastating march through the southern Appalachian forests, and since no effective means of combating this disease are known, the chestnut trees appear doomed to speedy extinction. Larch canker, a newly introduced disease described as potentially destructive as chestnut blight, threatens not only the larch but also Douglas fir and perhaps Western yellow pine, and in the opinion of foresters must be controlled.

STATE AND MUNICIPAL FORESTS. That the States, counties, and towns recognized the desirability of community forests was evidenced in the activities of the year. New York State made notable additions to its already sizeable Adirondack and Catskill preserves. Pennsylvania purchased a total area of 172,740 acres—the largest annual increment since 1902. New Jersey, Indiana, Alabama, North Carolina, and Ver-

mont increased their State forest areas either by purchase or gift. The renowned Franconia Notch area in New Hampshire came into public ownership through the combined effort of the State and of 15,000 private contributors. The Town of Warner, New Hampshire, found that its forest of 800 acres was an important asset in profitable winter employment for its citizens. This increasing interest in community forests manifested the changing public attitude. The forests were being accepted in their true light as important assets in the national welfare.

MISCELLANEOUS. The resignation on May 1, of Col. William B. Greeley, chief of the Forest Service of the United States Department of Agriculture, to become Secretary-Manager for the West Coast Lumbermen's Association, was a distinct loss to the cause of National forestry. During the eight years of Colonel Greeley's leadership, great improvement was manifested in the relations between the Forest Service and commercial forestry interests—a condition which promoted the welfare of forestry in general. Colonel Greeley was succeeded by Maj. Robert Y. Stuart, chief of the Branch of Public Relations of the Forest Service.

The National Arboretum, authorized by the United States Congress and to be located within the District of Columbia, was expected to include every species of forest tree that could be grown in the region, and thus to serve as a living herbarium.

Will C. Barnes, assistant forester of the United States Department of Agriculture Forest Service, in charge of range management and popular magazine writer, retired from the Service on July 1, 1928. George H. Collingwood, extension forester of the United States Department of Agriculture, was appointed forester of the American Forestry Association on June 1, 1928, to succeed Shirley W. Allen, who resigned to become extension professor of forestry at the University of Michigan.

"Forest Week," April 22-28, 1928, was set apart by proclamation of President Coolidge. The chief opening address was delivered by Charles Stewart, Canadian Minister of the Interior. "Certified by Centuries of Service" won the \$5000 prize offered by the National Lumber Manufacturers Association of Washington, D. C., for an effective slogan to stimulate the use of wood.

FORESTS. NATIONAL. See **FORESTRY.**

FORMOSA or **TAIWAN.** An island belonging to Japan off the Chinese province of Fukien; formerly belonging to China but ceded to Japan, May 8, 1895. Area, 13,889 square miles; population, according to the census of 1925, 3,994,236, of whom 189,630 were Japanese and 33,258 foreigners. Capital, Taihoku, with a population of 195,555 in 1925. Other large towns are Tainan, Kagi, and Taichu. In 1926 there were 132 primary schools for the instruction of Japanese, with 773 teachers and 24,782 pupils; and for the instruction of the natives there were 523 schools with 5050 teachers and 220,120 pupils.

Formosa produces in commercial quantities nearly every tropical, subtropical, and temperate-zone product. The island supplies all the world's Oolong tea and produces nearly all the world's natural camphor. The sugar industry, however, is the most important. The production of raw sugar amounts to more than 1,000,000,000 pounds annually. The entire output is shipped to

Japan, with the exception of that used in local consumption and an inferior grade shipped to China. The production of tea averages about 21,000,000 pounds annually, of which the United States takes about 10,000,000 pounds. The yield of rice is over 25,000,000 bushels. The indigo, hemp, pineapple, grapefruit, papaya, peanut, bean, and cereal industries are also important producers. Gold, silver, and copper are mined in considerable quantities, and coal and sulphur are exported. The exports in 1927 were valued at 44,592,000 yen and the imports at 65,555,000 yen. The revenues and expenditures have grown enormously under Japanese rule and at the present time amount to about 100,000,000 yen annually. The budget has never shown a deficit. Revenues and expenditures for the fiscal year beginning Apr. 1, 1927, were estimated at 111,599,202 yen. The principal expenditures are for communications and transportation, for the management of the Government's monopolies, for forestry, and for maintenance of various administrative bureaus. The island is under a governor-general, who is supported by a well-organized force of Japanese police. Governor-general in 1928, Mitsunoshin Yamakami.

FORT McHENRY, BALTIMORE. For restoration, see **CELEBRATIONS.**

FOUNDATIONS. See **BRIDGES.**

FOUNDATIONS, EDUCATIONAL. See **UNIVERSITIES AND COLLEGES.**

FOWLS. See **LIVESTOCK; VETERINARY MEDICINE.**

FRAMPTON, SIR GEORGE JAMES. English sculptor, died at London, May 21. Born in 1860, he studied at the Lambeth schools under W. S. Frith and at the Royal Academy schools, and at the latter won the gold medal and traveling scholarship, which enabled him to work in Paris under Mercié, in 1887. He studied also under the painter, Dagnan-Bouveret. His early pieces in marble and bronze were marked by sound technical ability, and won for him, at the early age of 34, an A.R.A., with full membership in the Royal Academy in 1902. After treating ideal subjects, beginning with "Socrates Teaching" (1884) and ending with "Children of the Wolf" (1892), he declared himself against "white sculpture," and devoted himself to color effects in all manner of material. Among his works of that period were "Mysteriarch," a female bust; a stately statue, "Dame Alice Owen," in bronze and marble; "Lamia," in bejeweled bronze and marble; and a youthful "St. George," mounted on an agate globe and with mother-of-pearl background. He excelled especially in purely decorative work; e.g., the terra-cotta façade of the Junior Constitutional Club, London; the sculptures of the Glasgow Art Gallery, and the remarkable bronze memorial to Charles Mitchell, shipbuilder, at Newcastles. Although primarily devoted to ideal and decorative sculpture, he modeled a number of portrait statues of great originality; among the best known are the colossal bronze Queen Victoria, Calcutta; the Edith Cavell Memorial, London; the statues of Queen Mary for Victoria Memorial Hall, Calcutta, and Government House, Delhi, and the portrait busts of King George and Queen Mary for the Guildhall, London. His "Peter Pan," in Kensington Gardens, has been highly praised. He was one of the most gifted and original sculptors that Great Britain has produced; his figures are highly suggestive of intellect and imagination and

show pathetic gravity of expression, but the designs sometimes lack unity. He was president of the Society of British Sculptors, 1911-12, and was knighted in 1908. He was an honorary associate, Royal Institute of British Architects; an honorary life member, Oxford Union Society; a past master of the Art Workers' Guild, and a member of the Royal Academy of Fine Arts, Milan.

FRANCE. A republic of western Europe, lying between 42°20' and 51°5' N. latitude and 7° 45' and 4°45' W. longitude. Capital, Paris.

AREA AND POPULATION. The area before the War was 207,054 square miles; total area in 1928, 212,659 square miles. The additions obtained under the Peace Treaty, and corresponding to Alsace-Lorraine under the German Empire, comprise the new departments of Bas-Rhin, 1848 square miles; Haut-Rhin, 1354 square miles; and Moselle, 2403 square miles. According to the census of 1926, the population was 40,743,851, but not including the military and naval forces and the crews of merchant ships abroad. The exclusions numbered 178,534 in 1926. The population in 1921 was 39,209,518. The cities with a population of over 200,000 at the census of 1926 were as follows: Paris 2,871,429; Marseilles, 652,196; Lyons, 570,840; Bordeaux, 256,026; and Lille, 201,921.

EDUCATION. Primary education is free and compulsory between the ages of 6 and 13. The latest available statistics (1924-25) showed 3736 public and private infant schools with 366,797 enrolled pupils and 81,026 public and private primary schools with 3,827,765 enrolled pupils. In November, 1926, there were 282 higher elementary schools for boys and 209 for girls. The numbers of pupils were 37,900 boys and 36,680 girls. Secondary education is provided by *lycées* supported by the State, colleges supported by the communes, and free schools supported by individuals and associations. In November, 1926, there were 125 *lycées* with 76,891 pupils and 242 communal colleges for boys in France and Algeria with 40,446 students, and 206 secondary schools for girls with 53,960 pupils. Higher education is supplied by the State universities, special schools under the direction of the State, and various private schools and faculties. No later statistics were available for higher education than those given in the preceding YEAR BOOK, when there were 52,960 students enrolled in the seventeen universities of France on July 31, 1925, distributed among the several faculties as follows: Law, 16,517; medicine, 9791; sciences, 11,466; letters, 10,229; pharmacy, 2500; schools of medicine and pharmacy, 2186; and theology, 271.

Other institutions dependent upon the Ministry of Public Education include: Collège de France; Museum of Natural History (which gives instruction in the sciences); Practical School of Higher Instruction, with its seat at the Sorbonne, offering courses in history, philosophy, and science; École des Beaux Arts; and various others. Dependent upon the other ministries are various institutions of technical instruction, including schools of commerce, agriculture, mines, forestry, military and naval science, etc., and finally, there are numerous technical schools of a lower grade dependent upon the Ministry of Public Instruction.

AGRICULTURE, ETC. The following table from the *Commerce Year Book* for 1928 gives the acre-

age and production of the principal crops during 1926 and 1927:

CROPS: AREA AND PRODUCTION

Crop	Area (thousands of acres)		Production (thousands of units—bushels except as indicated)	
	1926	1927	1926	1927
Wheat	13,972	13,209	231,766	284,353
Rye	1,958	1,970	30,076	36,799
Barley	1,706	1,754	45,856	55,572
Oats	8,677	8,542	364,122	372,539
Potatoes	3,611	3,895	409,190	629,960
Sugar beets ..	563	545	4,860 ^a	5,573 ^a
Grapevines ...	3,344	3,393	1,077,499 ^b	1,300,399 ^b

^a Unit, metric ton; ^b unit, gallon of wine.

According to the same source, about 56,184,000 acres were devoted to crops in France in 1925, representing 26.4 per cent of the total land area; 27,699,000 acres were used for permanent meadow and pasture; 5,919,000, for trees; shrubs, and bushes; 25,567,000 were covered by woods and forests; and 11,741,000 acres were waste and uncultivated land. On Dec. 31, 1926, there were 14,482,000 cattle, 5,777,000 swine, 10,775,000 sheep, 1,388,000 goats, 2,894,000 horses, 185,000 mules, and 264,000 asses. The value of the principal crops in 1926 was as follows: Wheat, \$374,812,000; oats, \$192,312,000; potatoes, \$265,022,000; and grape wines, \$262,255,000.

MINING. A record coal production slightly higher than in 1926 was attained in 1927. Toward the end of the year production fell off because of lower consumption and competition of foreign coal. Market conditions were bad during a large part of the year; there was a heavy accumulation of stocks, and profits were low. To prevent the shutdown of many mines, government aid for the industry was required in the way of reduced railway rates, purchases of coal by public utilities, and the establishment of an import licensing system. Miners' wages were cut 10 per cent, though the number of workers remained practically the same. In spite of the restrictions, imports of coal were much higher, while exports remained approximately the same. The output of coke increased 8 per cent, while imports declined rather sharply.

MINERAL AND METAL PRODUCTION (THOUSANDS OF METRIC TONS)

	1926	1927
Coal and lignite	51,421	51,780
Coke (metallurgical)	3,768	4,068
Briquets	4,092	3,906
Iron ore	39,469	45,672
Iron pyrites	190	204
Potash (K ₂ O content)	366	372
Bauxite	408	540
Pig iron	9,393	9,298
Steel (ingots and castings)	8,386	8,268
Iron and steel (finished products) ..	5,487	.....

The production of iron ore increased by 16 per cent and exceeded that in 1913. The heavier output was attributable especially to exports, as the domestic consumption remained almost stationary. Exports were more than one-fourth larger than in 1926. Shipments to Germany more than doubled and The Netherlands, Belgium, and Great Britain took considerably larger amounts. The potash production was maintained at practically the same level in 1927, as compared with notable advances made in 1925 and 1926. The relatively poorer showing was generally owing to unfavorable economic conditions. Toward the end of the year a law was adopted

defining the status and operations of the potash mines of Alsace, the administration of which is placed under the control of the Ministry of Public Works. France was again the largest producer of bauxite, the output of which showed a large increase.

MANUFACTURES. The following table from the above-mentioned source gives the manufacturing production for 1925, 1926, and 1927:

MANUFACTURING PRODUCTION

Product	1925	1926	1927
Silk (conditioned at Lyon) . . . 1,000 lbs.	14,471	14,577	12,707
Wool (conditioned at Roubaix-Tourcoing) . . . 1,000 lbs.	184,472	223,864	229,049
Wool (conditioned at Mazamet) . do.	38,281	46,006	58,387
Cotton cloth			
. 1,000 yds.	1,310,693	1,356,064	1,298,103
Artificial silk			
. metric tons	6,500	8,000	13,000
Boots and shoes (estimated)			
. 1,000 pairs	75,000	80,000	.....
Alcohol			
. 1,000 gals.	53,425	39,217	.....
Refined sugar ^a			
. metric tons	750,280	666,055	.....
Vessels launched			
. 1,000 gross tons	76	111	42

^a Data are for seasons ended following year.

COMMERCE. The total value of French imports in 1927 was 52,853,000,000 francs (\$2,073,952,000), as compared with 59,598,000,000 francs (\$1,932,258,000) in 1926. Exports were valued at 55,225,000,000 francs (\$2,162,729,000), as against 59,678,000,000 francs (\$1,935,178,000) during the preceding year. The weights of both imports and exports were much higher. Imports, totaling 49,359,000 metric tons, showed a 9 per cent increase over the 1926 figure, and exports at 38,051,000 metric tons were 17 per cent greater. The lower value in terms of francs resulted evidently from declines in French selling-and-buying prices abroad following the improvement in exchange value of the franc.

The falling off in franc value of imports was attributable largely to the heavy drop in franc value of raw materials, though on a dollar basis there was little change; in tonnage, those imports rose considerably, especially coal. Imports of manufactured articles were lower both in value and volume. Owing largely to insufficient crops in 1926, imports of foodstuffs, particularly wheat, increased considerably in both value and tonnage. Exports of foodstuffs were higher in value, but almost stable in weight. There was practically no change in franc values of raw materials exported during the two years, but their weight increased heavily in 1927. The franc value of manufactured articles declined sharply, though their volume was considerably higher.

That the visible trade balance was so favorable is traceable almost entirely to trade with the French colonies and protectorates. The total exports in 1927 to foreign countries other than colonies and protectorates were valued at 47,060,000,000 francs, while imports from those countries were valued at 46,807,000,000 francs, leaving an export surplus of 253,000,000 francs. The value of exports to the French colonies and protectorates was 8,165,000,000 francs, and of imports 6,046,000,000 francs, producing an ex-

port surplus of 2,119,000,000 francs. As compared with 1926 there was a large drop in the franc value of imports from the colonies and protectorates and also in exports to those countries. The lower value of imports applied practically to all the colonies. The value of exports to Algeria showed a substantial increase in nominal value, but those to the other principal colonies declined.

Imports from the United States, the largest supplier, were valued at 7,051,257,000 francs (\$276,691,000) in 1927 as against 7,913,087,000 francs (\$256,698,000) in 1926. Of this total, 36 per cent was represented by raw cotton. The quantity of cotton imports was slightly higher and their dollar value was also greater, but their franc value declined. Imports of grains were almost four times as much as in 1926, and the franc value rose in about the same ratio. Their value was 17 per cent of the value of total imports in 1927. The increase related principally to wheat and was brought about by a deficient cereal harvest in 1926. There was a big decline in imports of petroleum products on both a value, and a weight, basis. Imports of copper and of steam-driven and other machinery likewise fell off largely in weight and value. Other items showing declines on a weight basis were tobacco, tools and metal products, hides and raw furs, lumber, machine parts, and salted meats. Increases comprised principally coal, coal tar, bitumens and asphalt, sulphur, table fruits, colors, inks and crayons, animal fats, and chemical products.

Total exports in 1927 to the United States, fourth as a buyer, were valued at 3,605,055,000 francs (\$141,462,000) as compared with 3,901,572,000 francs (\$126,516,000) in 1926. Lingerie and clothing made up 13 per cent of the export values. While their weight and their dollar value were much higher than in 1926, the franc value was slightly lower. There was a decline in the weight and value of silk manufactures exported, though these constituted 10 per cent of total exports to the United States. Exports of cotton fabrics were greater in weight and in dollar value, but the franc value showed little change. Other principal items of exports to the United States showing increases in volume were hides and raw furs, manufactures of hides and skins, paper, tools and metal products, glass and crystal, prepared skins, rags, silk and floss-silk yarns, volatile oils, and iron and steel. Principal declines occurred in exports of wool fabrics, table fruits, perfumery, soap, chemical products, and potash.

FINANCE. According to the government proposals, total revenues of the general budget for 1929 would reach 45,280,929,000 francs, against which authorization was asked for appropriations amounting to 45,225,278,000 francs, leaving an indicated surplus of 55,651,000 francs. These totals represent an increase of 2,784,813,000 francs in revenues and 2,780,329,000 francs in expenditures, as compared with the budget estimates for 1928. In addition to the general budget, there were various annexed budgets, which for 1929 as presented, amounted to 6,233,674,000 francs. Of this total, the item "Posts, Telegraphs, and Telephones" represented 3,978,000,000 francs. Each annexed budget included its own independent revenues, which in the estimates correspond exactly with the expenditures authorized, any contribution from the public

treasury being included in the general budget. Consequently, the annexed budgets deserve only passing mention.

REVENUES AND THEIR SOURCES IN THE
FRENCH GENERAL BUDGET FOR 1929
[In millions of francs]

Item	(Estimated) 1928	(Proposed) 1929
Direct and assimilated taxes.....	8,536	9,797
Registry taxes	3,760	3,712
Stamp taxes	1,350	1,893
Taxes on transactions on the bourse	891	847
Tax on securities	3,426	3,525
Luxury tax	21	24
Customs duties	3,677	4,227
Indirect taxes	6,568	6,181
Business turnover tax	8,562	8,509
Sugar and saccharin tax	1,135	1,081
Monopolies	532	557
Public domain	444	444
Reimbursements	2,050	2,181
Sundry receipts	1,186	2,558
Exceptional receipts	342	288
Amounts recoverable in Algeria ..	17	22
Total	42,497	45,281

The following table shows proposed expenditures by categories for 1929, with comparative figures of estimated expenditures in 1928:

EXPENDITURES IN THE FRENCH GENERAL
BUDGET FOR 1929
[In millions of francs]

Ministries	1928 (estimated)	1929 (proposed)
Finance	25,279	25,241
Justice	246	286
Foreign Affairs	236	245
Interior	736	888
War	6,031	6,815
Marine	2,451	2,960
Public Instruction and Fine Arts	2,585	3,091
Commerce and Industry (commerce and industry, aviation and air transports) {	40	46
Labor, Health, and Social Welfare	218	317
Colonies	959	1,284
Agriculture	457	561
Public Works	381	454
Pensions	2,034	2,180
Total	792	907
Total	42,445	45,225

On Dec. 30, 1928, the budget was finally passed by the French Parliament with comparatively slight changes from the estimates presented by the Government. Expenditures were fixed at 45,366,000,000 francs and revenues at 45,430,000,000 francs leaving an estimated favorable surplus of 64,000,000 francs.

In the next column are shown the amount and composition of the public debt on July 31, 1926, and Feb. 29, 1928, the latest date for which such figures were published:

STABILIZATION OF THE FRANC. From a study on French National finance and stabilization published by the U. S. Department of Commerce in November, 1928, the following material is summarized. The committee of experts appointed by Parliament in the early summer of 1926, when the crisis in France was already acute, but before the Poincaré Government took office, pronounced itself in favor of the legal stabilization of the franc at the earliest possible moment. The Poincaré Government, however, realizing the unfor-

tunate position of the "rentiers," or holders of securities yielding a fixed income in francs, wished to avoid stabilization or at least to effect it at a higher level and was unwilling to take such an important step until all the conditions essential to its success had been fulfilled.

FRENCH PUBLIC DEBT ON JULY 31, 1926, AND
FEBRUARY 29, 1928
[In millions of francs]

Allocation	July 31, 1926	Feb. 29, 1928
INTERNAL DEBT		
Perpetual	101,676	101,740
Amortizable	43,644	77,579
Short term	42,262	25,757
Floating	94,197	77,018
Total, internal debt	281,779	282,094
FOREIGN DEBT ^a		
Commercial:		
United States	17,273	17,121
Great Britain	6,122	280
Netherlands	565	.....
Argentina	452	300
Uruguay	197	79
Total, commercial	24,609	17,780
Political:		
United States	74,709	74,443
Great Britain	81,002	86,957
Total, political	155,711	161,400
Total, foreign debt	180,320	179,180

^a The official figures for the foreign debt are given in gold francs at the old parity. In the above table they have been converted into the new franc created by the Law of June 24, 1928, by using the coefficient 4.917.

Before the franc could be stabilized with a certainty that its value in the exchange markets of the world could be maintained, it was necessary that the equilibrium of the budget should be restored, that the Treasury should have at its disposal a balance sufficient to its needs, that the floating debt should be reduced and provision made for the regular amortization of the balance, that the advances to the state by the Bank of France should be greatly reduced if not entirely wiped out, that the circulation should be covered by an adequate metallic reserve, that a sufficient fund of foreign exchange should be accumulated to make it possible to check any speculative attacks on the franc, and that the country's balance of international payments should not be unfavorable.

Finally, in June, 1928, the Bank of France informed M. Poincaré that the increasingly heavy purchases of exchange it had been making for the account of the Government could not be continued without incurring grave risks and that it was unwilling to renew the convention under which these purchases were being made and which expired June 30, 1928. It was a question either of stabilization or of the rapid appreciation of the franc once the protection afforded it by the bank was withdrawn. As the latter would inevitably have been followed by a severe crisis both for the Government and for the public, the stabilization law was presented to Parliament on Saturday, June 23, after the close of the stock exchanges. It was passed by both Houses the following day and made effective June 25.

Until that date, the monetary unit of France was, legally, the franc of 322.58 milli-

grams of gold 0.900 fine, worth 19.3 cents. Actually, the franc had, since December, 1926, been worth approximately four cents. The stabilization law created a new monetary unit, still called the franc, but defined as 65.5 milligrams of gold 0.900 fine, or slightly more than one-fifth the former weight. The gold parity of the franc in terms of the dollar is now approximately 3.92 cents, or 25.52 francs to the dollar, which corresponds very closely to its exchange value at the time the law was promulgated. Because of this last fact there was no reason to anticipate any marked changes in prices and the cost of living.

SHIPPING. The merchant marine of France at the end of June 30, 1927, consisted of 1752 vessels of 3,469,980 gross tons.

ENTRANCES AND CLEARANCES OF VESSELS IN FOREIGN TRADE

	Entrances		Clearances	
	1926	1927	1926	1927
Number of vessels with cargo	24,149	27,503	22,637	24,781
Capacity (1000 net registered tons): Total	44,132	49,055	37,782	41,933
Bordeaux	1,976	2,315	1,249	1,390
Boulogne	3,435	4,089	3,374	3,946
Calais	1,065	1,060	836	792
Cherbourg	10,519	10,726	10,480	10,635
Dunkirk	2,224	3,430	2,169	3,421
Havre	5,560	6,462	4,739	5,691
La Rochelle-Pallice	830	948	367	436
Marseille	10,204	10,524	9,605	9,962
Rouen	2,205	2,439	698	646

RAILWAYS. The railway system is made up of six private lines and one state line, statistics of which are given in the following table. In addition, in 1926, there were 12,603 miles of local railroads with gross receipts of 337,537,000 francs (\$10,936,000).

STATISTICS OF PRINCIPAL RAILWAYS

	1926	State, 1926	Private, 1926
Length of line....			
..... miles	26,872	6,907	19,965
Locomotives			
..... number	20,942	5,888	15,054
Passenger cars do..	36,108	11,303	24,805
Freight cars do..	545,434	133,660	411,774
Passengers carried			
..... thousands	800,957	269,286	531,671
Passenger miles			
..... millions	17,635	4,409	13,226
Freight carried			
..... 1000 metric tons	319,542	83,940	235,602
Ton miles			
..... millions	26,336	5,111	21,225
Train miles			
..... thousands	274,257	62,904	211,353
Gross receipts ^a			
.. 1000 francs	13,373,320	2,971,672	10,401,648
Passenger service			
..... do	3,033,375	653,197	2,380,178
Freight service			
..... do	10,121,913	2,253,466	7,868,447
Gross receipts, equivalent \$1,000	433,296	96,282	337,013

^a Including miscellaneous receipts not shown separately.

Gross receipts of the French railways were slightly higher in 1927 than in the preceding year, while operating expenses rose to such an extent that the net result was a deficit, as compared with a considerable surplus in 1926. Moreover, the small increase in receipts resulted from higher rates, as traffic fell off by 13 per cent for freight and 12 per cent for passengers. Daily car loadings averaged 60,369 as against 64,147 in 1926. Competition from automobile trucks was severe because of the high cost of railway

transportation. The deficit of the principal French railway companies in 1927 was estimated roughly at 850,000,000 francs against the surplus of 540,000,000 francs for 1926.

Taxes paid by the five major private railways of France in 1927 amounted to 2,569,000,000 francs, which were equivalent to 6 per cent of the French National budget. The largest of these railway taxpayers was the Paris-Lyons-Mediterranean which was assessed 958,000,000 francs, while the Paris-Orleans was second, paying 500,000 francs. According to the taxation scheme in force the Government collects 10 per cent on freight receipts and a graduated tax on the sale of passenger tickets, running as high as 60 per cent on first-class-de-luxe fares and averaging 32.5 per cent on combined passenger receipts. The Orleans and the Southern roads reported respective deficits of 84,000,000 francs and 74,000,000 francs after tax payments. Prior to the War the government tax on railway receipts was limited to 12 per cent on gross passenger revenue only.

As reported in the *Railway Age* (New York) in November, a new international railway link was established on November 1, with the completion of the Nice-Coni line, about 63 miles in length, joining the French and Italian cities and affording a short-line transportation route across the border between the two countries. Negotiations had been under way between the two governments for the building of the road since 1904, but the War and post-war circumstances prevented its completion until 1928. The new link just completed connects Nice with Viveola, Italy, passing through the Alpine Mountains and traversing some of the roughest country in the world. Due to this latter fact, it was necessary to construct 45 tunnels aggregating about 14¾ miles, the longest of which is 3¾ miles. There are also many bridges and viaducts made necessary by valleys and ravines. The nature of the country presented a number of engineering problems. One of the most serious of these difficulties was the nature of the soil which over a wide area of the line is of chalky substance, tending to cause landslides and necessitating the building of strong retaining walls, foundations, and deep drainages. A large deposit of sulphate of lime presented chemical difficulties resulting in the use of specially mixed cement for all masonry work. Thus the cost of the work on the final link reached an average of approximately \$442,000 per mile and a total expenditure of some \$17,639,150 was involved in the project. It was expected that the whole route will eventually be electrified.

For an account of the completion of the Franco-Spanish Trans-Pyrenean Railway, consult the paragraphs on *Railways* under the article, SPAIN.

ARMY. The French Army is divided into two forces, the metropolitan and the colonial, both under the War Ministry. There are three divisions of the metropolitan forces—the active army, reserves, and territorial army. The active metropolitan army on a peace basis in 1927 numbered 438,187, including an air force establishment of 32,886. Enlistment for the metropolitan army is regulated by the Law of April 1, 1923, and is on a compulsory basis, but liberal exemptions are allowed. Service in the active army is for 1½ years, although it is planned to reduce this to one year in 1930. Starting in

1927, service began at the age of 21. The colonial army is distinct from the metropolitan army and is made up partly of white troops and partly of colored troops. In 1927, the white troops of the colonial establishment numbered 59,000, the Foreign Legion troops numbered 10,000, and the colored troops, 180,000, making with the metropolitan army and gendarmerie, a total peace establishment of 717,483. The gendarmerie, a police force recruited from the army but concerned with civil functions, numbered 22,996 in 1927, about half of whom are mounted. The reserves and territorial army are divided into units corresponding to those of the active metropolitan army. See MILITARY PROGRESS.

NAVY. For an account of naval conditions in France, see NAVAL PROGRESS.

GOVERNMENT. According to the French constitution, the President is the executive, assisted by a cabinet responsible to the Chamber. The legislative power is vested in a Parliament or National Assembly. The President, elected by an absolute majority of vote for seven years, chooses his own cabinet; ordinarily, but not of necessity, selecting from among the members of of the two chambers. The Senate is made up of 314 members aged not less than forty years, and elected by an electoral college for nine years, one-third retiring every three years; the Chamber of Deputies is made up of 612 members elected by direct popular manhood suffrage for four years.

The President of the Republic in 1927, was Gaston Doumergue, elected June 13, 1924. The Ministry appointed July 24, 1926, was composed as follows: Prime Minister and Minister of Finance, Raymond Poincaré; Deputy Prime Minister and Minister of Justice, Louis Barthou; Interior, Albert Sarraut; War, Paul Painlevé; Marine, Georges Leygues; Foreign Affairs, Aristide Briand; Colonies, Léon Perrier; Public Instruction and Fine Arts, Edouard Herriot; Public Works, André Tardieu; Commerce, Maurice Bokanowski (q.v.); Agriculture, Henri Queuille; Labor, Hygiene, Assistance, and Social Prevision, André Fallières; Pensions, Louis Marin.

HISTORY

THE ELECTIONS. Interest in France during the early part of the year was devoted mainly to the elections which were to be held in April. All shades of political parties, of which there were more than a dozen, represented in the French Parliament were very keenly interested in the outcome and made every effort to assure themselves that their strength would not be weakened. It was quite evident to most observers that when Parliament opened on January 10, the debates would be held with one eye on the effect on the coming election and the other on the matter at hand. The first two weeks of the session were taken up with a discussion of the financial measures of the Poincaré Ministry. The opposition attacked the Government for not bringing about actual stabilization of the franc and insisted that it was about time that the National Union Government which was brought into power in 1926 to win "the battle of the franc" did something of definite value along the lines for which it was not only put in office but kept there. In a speech lasting seven hours, the Premier defended his position and

at the conclusion of the debate won a vote of confidence by 370 to 131.

A move which was bound to be reflected in the actions of the voters was the reduction of the military service from one year and a half to one year. This was popular on all sides and great joy was expressed at its passage although the law was not to go into effect until November, 1930. The issues of the campaign were almost entirely connected in some way or another with the financial measures of the Poincaré régime. Generally speaking, the Socialists were in favor of their capital levy idea, while the followers of Caillaux, the Radical Socialists, demanded stabilization of the franc and the readjustment of the entire tax system of the country. Other internal affairs, such as the religious and educational issues, and questions of foreign policy, were kept in the background to a large extent, although from time to time they cropped out in the platforms of the various political parties or in the speeches of the leaders. The ministry, which was made up of the leaders of most of the parties, would probably rather have their rule as a group continued than throw the fortunes of the country back into the turmoil of the old coalition governments which preceded the selection of Poincaré in 1926.

The election was set for April 22, and the second ballot, if necessary, for April 29. The Parliament adjourned on March 17. In passing, it might be noted that Parliament passed an important piece of social legislation before adjourning, namely, a workers' insurance measure, by the terms of which the Government was to form an insurance fund from 10 per cent of the wages of the worker, 5 per cent from employees and 5 per cent from employers.

The results of the elections held on April 22 and 29 were in accordance with the predictions of the best-informed observers. The Poincaré Ministry was virtually resworn into office with a larger majority than it had before. He could count on approximately 460 members out of 612 and if he cared to could get along without the aid of the Radical Socialists. As a matter of fact there was a distinct swing from the Left to the Right, one indication of such a movement being the reduction in the number of Communist members from 27 to 14. The largest single group in the new Chamber was the Republican-Democratic Union, the followers of Louis Marin, the Nationalist, who elected 162 members. The Radical Socialists returned 110 members and the Socialists, 101. Of the ministers who ran for reelection only André Fallières, Minister of Labor, failed to retain his seat. He was succeeded later by Louis Loucheur. Premier Poincaré, who is a Senator, was not up for reelection.

THE ALSATIAN QUESTION. One of the peculiar results of the election was the successful campaigns of three Alsatian autonomists, Ricklin, Rossé, and Dahlet. Since the return of Alsace from Germany to France, there had been a decided trend in certain quarters of the "redeemed province" for separation from France. This action was not desired particularly because of a preference for Germany but because there was a feeling that Alsace was neither French nor German but was a country by itself. The election of the three autonomists brought the entire separatist movement to a head and into the public press, much to the astonishment of

those people who believed that every waking thought of the Alsatians since 1870 had been reunion with France.

On May 1, only a few days after the election there was held a more or less spectacular trial on the charges of conspiracy of more than a score of agitators for the movement. Two of the defendants were successful candidates in the recent election and the third was a witness. Premier Poincaré had stated on several occasions that France would never consent to a separation of Alsace and Lorraine from France. On the other hand he attempted to mollify the Alsatians by stating that neither he nor his Government had any desire to interfere with the religious customs or the cultural traditions of the provinces. The Alsatians are all true Catholics and were afraid that after annexation France would introduce the separation of the church and state in the provinces and would attempt to close the religious schools. The result of the trial which was severely condemned in all Alsatian quarters was the finding of four of the fifteen defendants who actually stood trial, guilty, and the penalty imposed was one year in prison to be followed by five years in exile. G. E. Ricklin and J. V. Rossé, the two successful candidates for the Chamber of Deputies were two of the four convicted and imprisoned. For the Alsatian side of the problem the reader is referred to the International Relations Section of *The Nation*, vol. 127, No. 3293, published in the fall of 1928. Ricklin and Rossé were later pardoned by President Doumergue but were expelled from the Chamber.

THE NEW CHAMBER. The most important act of the new Parliament was the recognition of the *de facto* stabilization of the franc, by passing the Law of June 24 which made *de jure* stabilization, which had been expected since 1926, a fact. For the details of the law, see above under *Finance*. This was the most important measure of the Parliament which adjourned July 29 until the fall.

CABINET CHANGES. From the time of the elections there was a grave doubt as to whether the Poincaré Ministry could count on the support of all the factions which previously had been held together in the cause of the "battle of the franc." When the franc was finally legally stabilized, it was felt in many quarters that Poincaré had "done his bit" for France and should step aside. It was also felt by some of the component parties that their future lay more in "going it alone" than in tying up with the Nationalist Union group. This was particularly true of the Radical Socialists and the Socialists. The first important measure to be taken up in the fall meeting of Parliament was the question of the 1929 budget. Two phases of the budget were bitterly attacked by the opponents of Poincaré, namely, the provision concerning the disposal of property belonging to religious orders and the use of the money in the "proper" training of missionaries abroad, and, secondly, the military and defense sections of the budget. The Socialists, in particular declared that the military appropriations were far too heavy. A compromise was reached on the question of the religious orders, but the action of the cabinet was condemned by a meeting of the Socialist party and the resignation of four members of the party, Herriot, Sarraut, Queuille, and Perrier, from the cabinet was demanded. On

November 6, these four members handed in their resignations to Premier Poincaré, who in turn, handed in the resignation of the entire cabinet to President Doumergue, on the grounds of his off-asserted policy that the National Union cabinet would stand or fall as a unit.

President Doumergue consulted with the leaders of the various groups and the opinion of the majority seemed to favor the retention of Poincaré without the support of the Socialists. An attempt to recreate the left *bloc* failed and President Doumergue finally turned to Poincaré and requested him to form a new group. His attempts to organize a new government along the lines of the Nationalist Union cabinet failed because the Radical Left refused to cooperate. On Armistice Day, Poincaré announced a new cabinet which failed to give the Radical Left any representation. Poincaré himself failed to take a portfolio on the grounds that he needed his entire time to look after the government in general.

NEW CABINET. The new cabinet was composed as follows: Premier without Portfolio, Raymond Poincaré; Vice Premier and Minister of Justice, Louis Barthou; Foreign Affairs, Aristide Briand; Interior, André Tardieu; Finance, Henri Chéron; War, Paul Painlevé; Public Instruction, Pierre Maraud; Marine, Georges Leygues; Public Works, Pierre Forget; Commerce, Georges Bonafons; Agriculture, Jean Hennessy; Labor, Louis Loucheur; Colonies, André Maginot; Pensions, Louis Antériou; Air, Laurent Eynac. It will be noted, if a comparison is made with the cabinet named in the paragraph above on *Government*, that the four members of the Radical Left, Herriot, Queuille, Perrier, and Sarraut were dropped in the formation of the new cabinet, as was Louis Marin, a member of the Right. It was thought that although he was the virtual leader of the largest *bloc* supporting Poincaré, he was unavailable because of harsh attacks he made on the Left after the fall of the Nationalist Union Ministry. Maurice Bokanowski, (q.v.) a powerful member of the Union cabinet, was killed in an airplane accident on September 2.

The new cabinet, of course, without the support of most of the members of the Left, was compelled to direct the fortunes of the Government with a considerably reduced majority, approximately 320 out of a total of 612 votes. There was one thing in its favor, however, and that was the fact that it was practically solidly behind Poincaré, who was no longer compelled to dicker with the members of the Left to gain support for his measures.

SITUATION AT THE CLOSE OF THE YEAR. Premier Poincaré's new cabinet weathered one or two votes of confidence in the early stages of its career in early November, and then settled down to a discussion of the budget for 1929, parts of which had caused the disruption of the previous cabinet. As noted above under *Finance*, the budget was finally passed at the very end of the year. This achievement, however, was not accomplished without serious clashes in the cabinet itself, especially between the Premier and his Minister of Finance, Henri Chéron. The budget was really the work of the Premier when he held the portfolio of Finance and he did not always agree with the methods used by M. Chéron or the compromises agreed to by him in passing it through the two Houses. It was re-

ported in the press that M. Cheron told the Prime Minister that he did not wish him meddling with the budget which was now in his hands as Finance Minister.

For a short time in the last week of the year, it appeared that internal dissension would break up the cabinet. The two vital points of disagreement between Poincaré and Cheron were the questions of increasing the salaries of parliamentary members and the forbidding of members of either House to join companies in which they were not interested before election. The final result of the matter was that both measures passed over Poincaré's evident, but not expressed, disapproval. The Premier, in the heat of the discussions, threatened to resign, but the year closed without such action being taken and on the last day of the year the French press was unanimous in its opinion that although opposed successfully on these two measures of the budget, he would remain at the helm of the ship of state. As a matter of fact, he, himself so decided at a cabinet meeting held on December 31.

See KELLOGG TREATIES; PEACE AND PEACE MOVEMENTS.

FREAS, THOMAS BRUCE. American chemist and educator, died at New York, March 15. He was born near Newark, Ohio, Nov. 2, 1868. He was graduated from Stanford University in 1896, and received the Ph.D. degree from the University of Chicago in 1911. He was principal of the high school, Hiawatha, Kan., 1896-97; chemist with the Western Electric Co., Chicago, 1897-98; assistant in chemistry and graduate student, University of Chicago, 1898-1903; manager of the Ernest Leitz apparatus house, Chicago, 1903-04; instructor in chemistry, University of Chicago, 1904, and successively assistant professor, associate professor, and professor of chemistry at Columbia University, New York, since 1911. Professor Freas was an authority on the design and management of chemical laboratories and had an international reputation as an inventor and manufacturer of precision apparatus for use in chemical and industrial research. He was president of the Thermo-Electric Instrument Company. He was a fellow of the American Association for the Advancement of Science and a member of several other learned societies.

FREDERICK II, WILLIAM LOUIS LEOPOLD AUGUSTUS. Last Duke of Baden, died at Badenweiler, Germany, August 9. He was born at Karlsruhe, July 9, 1857, the son of Grand Duke Frederick I, and Princess Louise of Prussia, who was an aunt of the former Emperor William II. Having been educated at the universities of Heidelberg and Freiburg, he entered the German army, and was made Commanding General of the Eighth Army Corps, 1897-1901, retiring the following year. He succeeded to the throne of Baden, Sept. 28, 1907, and ruled liberally, without attempting to go beyond his constitutional powers. His government tried to bring about an early settlement of the World War, advocating democratic reforms in the empire, and it was his heir, Prince Max, his brother's son, whom William II chose as Chancellor of the Empire in 1918. The release of republican fervor which animated the German States in 1918 stirred Baden to a revolution, November 10, in spite of the popularity of the reigning Duke, and Grand Duke Frederick II,

whose family had ruled Baden for nine centuries, abdicated with the consent of his heirs, receiving due homage from the provisional Republican Government which took his place.

FREE BAPTISTS. See BAPTISTS, FREE.

FRENCH CONGO. See FRENCH EQUATORIAL AFRICA.

FRENCH EQUATORIAL AFRICA. A French possession in Africa on the Atlantic coast between the territories of the Belgian Congo and British Kamerun, comprising the region formerly known as the French Congo. It stretches northward to the Bahr-el-Ghazel and Lake Chad, and is bounded by the Congo and Ubangi rivers in the interior. Area, 975,635 square miles; population, according to the census of 1926, 3,127,707, of whom 2502 were Europeans. The possession comprises the four colonies of Gabun, Middle Congo, Ubangi-Shari, and Chad. The boundary between French Equatorial Africa and the Anglo-Egyptian Sudan was fixed by an agreement signed Feb. 28, 1924.

Equatorial Africa is very rich in natural resources, but for the most part they are undeveloped. There are about 30,000 square miles of tropical forests extending to the Gabon coast containing many species of valuable timber. Palm oil and wild caoutchouc are the principal commercial products. Coffee is raised to some extent. Livestock includes cattle, sheep, camels, horses, asses, and ostriches. Copper, zinc, and lead are to be found. The total imports in 1926 were valued at 170,431,683 francs and the total exports at 94,249,135 francs. In 1928 the general budget for the four colonies balanced at 46,550,000 francs. The revenues are made up of import, export, and excise duties, navigation fees, and certain semi-direct taxes. The colonies are under a governor-general whose headquarters are at Brazzaville, but each colony is locally governed by a lieutenant-governor, aided by an administrative council. Governor-General, in 1928, R. Antonetti, appointed in July, 1924.

FRENCH GUIANA, gè-a'-ná, CAYENNE. A French colony and penal settlement on the northeast coast of South America. Area, about 34,740 square miles; population at the census of 1926, 47,341. Cayenne, a seaport town, is the capital with a population in 1926 of 13,936. The population figures do not include the number in the penal settlement of Maroni, the floating population of miners, French officials, or native tribes. The latest available educational statistics (1926-27) showed a school population of 3600 exclusive of Maroni, which had 215. The extensive forests are rich in timber of commercial importance. Although agriculture is not engaged in on a large scale, the following products are raised: cacao, coffee, gutta-percha, indigo, maize, manioc, rice, sugar cane, and tobacco. The chief occupation is placer mining for gold. Other minerals produced are silver, iron, and phosphates. The total imports in 1926 amounted to 61,973,600 francs and the total exports to 46,105,881 francs. The chief articles of export were gold, rosewood essence, various timbers, phosphates, cacao, balata, and hides. The budget for 1926 provided for revenues of 11,000,000 francs and expenditures of 10,500,000 francs. The colony is under a governor who is aided by a privy council and by a council-general elected by French citizens in Guiana, and is represented in the French Parliament by one deputy.

FRENCH GUINEA. A French colony on the west coast of Africa between Portuguese Guinea and the colony of Sierra Leone. Area, about 92,640 square miles; population, estimated in 1927, 2,133,003, including 2133 Europeans, of whom 1031 were French. Capital, Conakry. The chief products are palm oil, palm nuts, gum, rubber, millet, rice, and coffee; experiments have been made in the cultivation of bananas, pineapples, rubber trees, etc. In 1927 there were 460,000 cattle, 125,000 sheep, 170,000 goats, 2400 horses, and 580 asses. Some gold is found in the colony. The imports in 1926 were valued at 153,543,000 francs and the exports at 75,839,637. The chief exports were rubber, cattle, ground nuts, hides, wax, wool, and palm-kernels. The budget for 1927 amounted to 29,862,979 francs. The colony is under the Governor-General of French West Africa. See **FRENCH WEST AFRICA**.

FRENCH INDIA. The name given to the group of French dependencies in India, of which the chief is Pondichéry. The area of the five colonies is about 196 square miles and the collective population in 1927 was estimated at 284,432. The five dependencies with their estimated populations in that year were as follows: Pondichéry, 184,315; Karikal, 57,192; Chandernagor, 26,595; Mahé, 11,572; and Yanaon, 4758. In 1926 the Government maintained 59 primary schools and three colleges, with 300 teachers and 10,459 pupils. In 1927 the budget balanced at 2,835,350 rupees. The chief crops are paddy, rice, sugar, cotton, manioc, cacao, coffee, and groundnuts. There are at Pondichéry three cotton mills and at Chandernagor one jute mill; the cotton mills have, in all, 1635 looms and 72,060 spindles, employing 8225 persons. The total imports for all the dependencies in 1925 amounted to 44,274,164 francs and the total exports to 51,748,624 francs. French India has 43 miles of railway. The dependencies are under a governor whose headquarters are at Pondichéry, and an elective general council; they send one deputy and one senator to the French Parliament.

FRENCH INDO-CHINA. A region in south-eastern Asia, comprising the French colony of Cochinchina, and the protectorates of Annam, Cambodia, Tonking, and Laos, as well as Kwang-Chau-Wan, which has been leased from China, and the district around Battambang, which was ceded by Siam. Total area, about 274,385 square miles; population in 1927, 19,999,423, of whom 34,443 were Europeans (excluding military forces). The native Annamites constitute about three-fourths of the population. Capital, Hanoi, with a population of approximately 115,000. Other important cities are Cholon, Bindinh, Saigon, Phnom-Penh, Hué, Vien Thiane, and Haifong. The region of which Saigon is the centre is chiefly agricultural, being one of the greatest rice producing areas of the world, but fisheries along the coast and along the lakes are of some importance. Haifong is the centre of a region devoted to agriculture, mining, and manufacture. A third district around the port of Tourane produces chiefly cinnamon, sugar, and tea. In 1923 an irrigation system was completed reclaiming 45,000 acres on which two rice crops a year could be produced.

The mineral resources of French Indo-China include coal, zinc, tin, lignite, antimony, and wolfram. The forest reserves are very important but suffer from inefficient exploitation. The im-

port trade in 1926 was valued at 2,641,945,471 francs and the export trade at 3,033,440,986 francs. The general budget for 1927 balanced at 78,850,000 piastres for revenue and expenditure. At the end of 1927 the total length of railway, line was 1478, about two-thirds of which belonged to the Government. Indo-China is under a governor-general and a superior council which acts through a permanent commission, and at the head of each state is a resident superior, with the exception of Cochinchina, which is directly under the home Government. Governor-general (*ad interim*), M. Monguillot, appointed Jan. 24, 1928.

FRENCH IVORY COAST. See **IVORY COAST**.
FRENCH LANGUAGE. See **PHILOLOGY**, **MODERN**.

FRENCH LITERATURE. The slow return to normal after the wave of abnormality produced by the World War continued. The only striking feature perhaps was the formidable industry of French authors; they used to be satisfied with one, possibly two volumes a year; in 1928 many of them were producing three, four, or even more. It is true that—possibly for business reasons—the length of the books is often reduced; but even so, our remark remains true. More and more, we might add, the bulk of production was in the domain of fiction—especially if one adds to this the fad for interpretative biography which was so prevalent during the year.

Among the topics of discussion of the year, it is well to mention that the affair "Action-Française" (see previous **YEAR BOOKS**) was far from becoming less serious; three important publications were: Monseigneur Baudrillart, *Vocation catholique de la France et Fidélité au Saint-Siège à travers les Ages* (Conférences faites à Notre-Dame de Paris); P. Rémond, *L'Heure d'Obéir*; and trying to be quite impartial, Nicolas Fontaine (pseudonym for a well-known politician), *Saint-Siège, Action Française, et Catholiques intégraux*. The question of plagiarism once more came up; this year in connection with various works of André Maurois; see a good account in the *Saturday Review of Literature* of July 21, 1928. A parallel case to the Goncourt *Journal* publication and to a certain extent connected with it, was that of the Letters of Zola: was their publication contrary to public peace? Minister Herriot, supported by Premier Poincaré, decided in favor of the publication in spite of the Academy Goncourt's protest. Another quarrel, of the same nature, broke out when a man of letters published certain statements about George Sand, which were found most objectionable by the descendants of the famous authoress; see, about the Lauth-Boulinger quarrel, the *Mercure de France*, August 15. The presentation of a play (September 15, Porte St. Martin), *Napoleon IV*, came near creating a diplomatic incident between England and France, Maurice Rostand, the author, having taken as the subject the legend according to which Queen Victoria would have favored a plan to send the descendant of Napoleon III to Africa to be killed, thus freeing Europe from a new Napoleonic threat.

Much was made of the centenary of Taine; it amounted to a real rehabilitation since for some years attacks on him had been plentiful; the *École Normale Supérieure* especially celebrated one of her most distinguished spiritual sons.

The Sorbonne organized a special ceremony to commemorate another "normalien," Edmond About, also for his hundredth anniversary. Jules Verne received from the press his share of honors, for the same reason. Finally the tercentenary of Malherbe was marked by two new editions of his poetical works (*L'ardanchet*, and *Cité des Livres*). Let us recall here the ceremonies in which the City of Paris took possession of the famous Maison d'Hauteville (in the Island of Guernsey) which was converted into a Victor Hugo museum (there were written some of the best known of the poet's works, as *Les Misérables*, and *La légende des siècles*); these took place June 15, 1927, and were followed by the appearance in 1928, of a luxurious publication, richly illustrated, by R. Weiss (Imprimerie nationale).

POETRY. In spite of advancing years, Henri de Régnier remained faithful to the muse; his *Flamma Tenax* is a challenge to our age which seems to stifle poetry: poets need not despair; V. Hugo is praised as the great master. Another veteran is Francis Jammes who in connection with his *Divine Douleur* writes a brilliant manifesto against the modern trend of literature. Maurice Rostand, in *Morbidezza* strikes the note of romanticism and especially reminds of Musset's *Maladie du siècle*: Charles Vildrac published his *Poèmes de l'Abbaye* (a very timely publication since much has been written recently about this group, the best-known representative of which is Duhamel). Jules Romains offers a bouquet of *Les chants de dix années*. Tristan Derème sings in his usual vein, in *L'Enfant perdu* (anacreontic). Marcel Ormay, author of *Cœur gros. Carrefours. Visage retourné*, of the school of "Le Divan" (he is a disciple of Toulet), earns the desirable Prix Catulle Mendès, while Ch. Th. Feret wins the Prix des Vikings with *La Normandie exaltée*. The most coveted prize in poetry, however, the *Prix Moréas* (5000 francs), went to Philippe Chabaniex for his whimsical and graceful *Bouquet d'Ophélie*, with, as very close rivals, Dubech's *Poèmes*, A. Mary's *Poèmes*, and Émile Herriot's *Poésies*. Many poets would no doubt deserve as much as the few following to be remembered, but space is limited: J. L. Aubrun, *Le Lys brisé*; George Day, *Rhapsodie en mauve*; Louis Chollet, *La flamme errante*; Jean Malan, *Vingt poèmes de la nuit*.

THEATRE. Some of the successes of the year were: Lucien Descaves, *Les fautes de l'amour*, in which this old naturalist advocates in a rather old-fashioned realistic drama, sympathy and forgiveness for the "fille-mère"; then, to the surprise of many, Giraudoux's *Siegfried et le Limousin*, the novel of a few years ago (double personality); then, Tolstoi's *Le cadavre vivant*, success due in great part to the talented presentation of the Pitoëff company. Finally the "succès de scandale," Maurice Rostand's *Napoléon IV* which was mentioned above. Moving in the same historical cycle, Sacha Guitry wrote his best success of the year, *Mariette, ou comme on écrit l'histoire*, a love episode of Prince Louis Bonaparte, later Napoleon III. Luc Durtain had a succès d'estime with his *Donneur de sang*, at the Odéon. A play which was interesting at least as far as the idea is concerned, was M. Charmel, *Les trois langages* (Théâtre de l'Œuvre): A nervous woman; in the first act, she always says the opposite of what she thinks—and all goes wrong; in the second act, she says all she

thinks, with the utmost frankness—and all goes wrong; in the third act, she offers a mixture of truth and lying, and this works best. An amusing sketch of Alfred Savoir, *Le cocktail*, is inspired by an American law according to which a man has no right to receive a lady in his hotel room, except if there is a sitting room adjoining the alcove—and then he must leave the door open toward the hall: A young Frenchman receives a former fiancée, and gets into trouble.

This leads us to the plays that claim nothing but to amuse the public and which as usual were rather numerous and good: a few of the best are H. Duvernois, *Eusèbe*; Roger Martin Du Gard, *La Gonfle*; *Farce paysanne*; Marcel Achard, *La vie est belle*; Raoul Praxy, *Le jeu du mari*; Birabeau et Dolley, *La fille et le garçon*, and *Votre sourire*. The play by Ed. Schneider, *Exaltation*, which won the Prix Brieux of 3000 francs against 300 competitors, was presented in Geneva, but not in Paris up to the end of the year (it was published by *L'Illustration*). Let us not forget to mention the remarkable performance of Aristophanes's *Birds* (adapted with Mussolini as the "Duce") at the theatre of La Chimère. New volumes of the *Théâtres complets* of Porto riche and of Roman Coolus came out; also a volume of H. Duvernois, *Comédies en un acte*; and Pierre Hamp, *Monsieur l'Administrateur* and *Madame la Guerre*. Jean Cocteau published an *Antigone*. Two volumes of interest were L. Dubech, *La crise du Théâtre*, and E. Sée, *Le Théâtre français contemporain* (Colin). The Hugo Cromwell had not yet been given at the Comédie Française.

THE NOVEL. The *Grand Prix du Roman* of the French Academy was awarded in June to Mme. Jean Balde (well known especially for her novel *Vigne et maison*) for her new book *Reine d'Arbois*—a not very original theme, but treated with a great elevation of thought. In December the Prix Goncourt went to Maurice Constantin-Weyer, who had already won recognition by several volumes dealing with Canadian life (where he had stayed for some years, just like L. Hémon, the author of *Maria Chapdelaine*); the crowned book, which consists chiefly of description of wild Canada, is called *Un homme se penche sur son passé*. Votes went also to P. E. Cadilhac, *Flambeaux éteints*, Mare Stéphane, *Cœur de Trimard*, René Bizet, *Double vie de Gérard de Nerval*, André Chamson, *Le crime des justes*. The Prix Femina went once more to a woman, Mme. Dominique Dunois (real name, Marguerite Lemesle) for her *Georgette Garou*, a very modern story of the experiences of a brave peasant woman who has no child from her husband to inherit the farm and tries to escape the odium in getting one from another man, and then is tabooed. Votes went also to Ignace Legrand, *La patrie intérieure*—a sombre war book, Drieu de la Rochelle, *Blèche*, André Malraux, *Les conquérants*. The *Prix Renandot* (mock prize because there is no money award connected with it) went to André Obey's *Joueur de Triangle*, depicting the soul of a child with a musical avocation. Votes went also to Martin Maurice, *Amour, terre inconnue*, and to René-Marie Hermant, *Sale coin*.

As opposed to the modern tendency to write short and quick books, one must bow before such attempts to be more substantial and profound as Behaine's *Histoire d'une société*, begun in

1908 and the eighth volume of which, *Avec les yeux de l'esprit*, was published; Roger Martin Du Gard added two volumes to his *Les Thibault* series, namely, *La consultation*, and *La sœur-lina*; and Jules Romains offered the second volume of a trilogy under the name *Le dieu des corps*: *Julienne* was the first volume, the second now is *Dieu des corps*, and the third *Quand le navire* is to come. This year's book was not to be recommended to young people. A fine novel in the good realistic vein is Eugène Montfort's *César Casteldor*: Georges Iman's *Le cœur et les chiffres* could have as motto the phrase "D'un côté des coquins avoués, de l'autre des forbans hypocrites." Gaston Chérau's *A l'ombre du maître* is a rather sad family picture with a tyrannical head; François Fosca's *L'amour forcé* shows once more the harm brought about by slander and gossip; Pierre Bost continued to score, this time with a novel on business life, *Faillite*; and Marcel Rouff in *Joubahan* pointed out the evils of an over-industrialized society. André Maurois left for a while biography for an original novel, *Climats*: a man married first to a woman he loves passionately while she is calm in her affection, then to a woman who loves him passionately while he is moderately moved.

Henry Bordeaux also tried hard to renew his style, first in *Calvaire de Cimiez*, with a Solomon-wise judgment, and then in *Andromède et le monstre*, a woman in the artistic circles of Paris, who is under the spell of a man from whom she cannot free herself (Racinian theme). P. Benoit, in *Azelle* writes about international marriage between a Frenchman and a German woman. Thierry Sandre shows more appreciation of nuances in his *Les yeux fermés*, in which a war nurse marries a war blind man, and her courage does not prevent the feeling of the real sacrifice. Fr. Carco, *Rue Pigalle* and Phil. Soupault in *Dernières nuits* describe the Paris-apache. Duhamel in *La nuit d'orage* gives a curious case of superstition to which a great scholar falls the victim. Mauriac's title, *Destins*, already indicated the trend of his story, and Henri Deberly (the author of *Le supplice de Phédre*) in *Un homme et un autre* describes one of those cases that Porché (see the last YEAR BOOK) wished to banish from literature. Louis Artus, in *Les chiens de Dieu* had a profoundly catholic novel. E. Pérochon, author of *Néne*, Goncourt Prize in 1920, had a delightful book on animal life, for children, *Le livre des quatre Saisons*.

Let us end this list of interesting novels of the year by mere mention of A. Thérive, *Sans âme* (heroism of the oppressed classes); E. Zavier, *La course aux rebelles*; L.-L. Martin, *L'ascension d'Élise Amour*; Ch. Derennes, *Les noces de la banquette* (eighteenth century); and two peasant stories—stories not as popular as they were some years ago: Bouzinac-Cambon, *Le domaine abandonné*, and G. Barbarin, *Le père Pou* (quite a character).

There were three historical novels that cannot be left unmentioned: J. H. Rosny, *jeune, Les Furies*, in which an attempt is made to show William II of Germany carried away by fatal force, "les furies"; L. Dumur, *Dieu protège le Tsar*, the Rasputin affair treated without reticence; and M. Magne, *Poison de Goa*, a picture of Inquisition Spain.

Still quite in vogue were novels dealing with exotic themes. Among the best were: Dorgelés,

La caravane sans chameaux: A Malraux, *Les conquérants* (China); Jacques Heller, *Nord, récits de l'Arctique* (very successful); Panait Istrati kept fascinating the public with his Near East revelation a little in the Gorki style: *Mes Départs*, and *Les chardons de Baragon*. Shall we classify here Ch. Oulmont's *Cœur à corps*, a description of the society of Geneva, seat of the League of Nations?

A few novels of the gay sort: Tristan Bernard needs no praise for *Le voyage imprévu*; the same is true of Dekobra who offers *Minuit*. Less known but just as witty is Lefèvre, in *La Grâce de Lisieux*. A curious satire on Paris and surroundings is René Jouglet's *Voyage à la République de Piles*. See also Jean Maréze, *Apprenti Gigolo*; Henri Falk, *Le Fils improvisé*.

That when women throw overboard the social restraint in art they hardly know where to stop in their desire to out-distance man was once more evident in 1928: Rachilde leads with *Le Prisonnier* (allusion to Bourdet's famous play on Lesbianism in 1926); then comes Mme. Jean-Maxime David with *Premier inceste*; Gabrielle Réval describes Revolutionary Russia in *La tour de feu*; Mme. Claude Isambert in *Le voyage avec l'ombre* shows a woman in revolt, coming back, however, at the end to more rational views of life; Elissa Rhaïs, offers her *Sein blanc*. Quite chaste is Marie LeFranc (the Femina Prize, 1927) who describes her dreaming in Canadian wilderness in *Le Poste sur la Dune*; Mme. Jean Balde, having received the *Grand Prix du Roman* in June, had a new novel ready in the fall, *Aiguillage*. Henriette Charasson offers *Deux petits hommes et leur mère*.

SHORT STORIES. Almost at random may be quoted among the most successful: Kessel, *Nuits de Sibérie*; Paul Morand, *Magie noire* (Negro stories collected in various continents); Claude Farrère, *L'autre côté* (meaning the other side of the grave); Jean Schlumberger, *Yeux de dix-huit ans*; Luc Durtain, *Hollywood dépassé* (American stories); Edmond Jaloux (*Grand Prix de Littérature* in 1928), *La branche morte* (in the style of Estautié); Marcel Boulenger, *Scrupule d'ildeverte* (light); Barbusse, *Faits divers*. And last, but not least, P. Bourget, *Deux nouvelles* (*Confidence de femme* and *Scrupule d'apostat*).

VARIOUS ITEMS. As usual, such books which cannot be refused a place in literature, yet cannot properly be classified in the conventional genres, are mentioned here: Maeterlinck's studies on the more than three dimensions space, *La Vie de l'Espace* (Cf. Richet's *Notre sixième sens*); Duhamel's *Les Sept dernières plaies*, which is a sort of continuation of *Civilisation*; L. Daudet's *Les Disciples d'Emmaüs* (in the series *Courrier des Pays-Bas*); Princesse de Biblesco, in *Noblesse de Robe* has a philosophical treatise on the dress in modern civilization. The brothers Tharaud give reminiscences in *Mes années chez Barrès* (as secretary). Then, there are again several volumes giving impressions of French authors abroad, such as H. Béraud, *Rendez-vous Européens*; P. Morand, *Paris-Tombouctou*; H. de Régner, *L'Altana ou la Vie Vénitienne* (1899-1924); Henriette Célérie, *Épopée marocaine*.

Almost as popular as the novel was the interpretative biography; there was a regular deluge of these volumes in 1928. A few titles may be given. In the collection *Les Grandes évis-*

tences: Bizet, *Double vie de Gérard de Nerval*; Charpentier, *Vie meurtrière d'A. de Musset*; Escholier, *Vie glorieuse de V. Hugo*; Journeval, *Vie orageuse de Mirabeau*; Arnaud, *Vie turbulente de Camille Desmoulins*; André, *Vie harmonieuse de Mistral*, etc.; in the *Collection des vies amoureuses*: Gérard d'Houville, *La belle Hélène*; Reboux, *Mme. Tallien*; Franck-Nohain, *La Fontaine*; Maclair, *Baudelaire*; Royer, *George Sand*, etc.

In other collections, or independently: Lives of musicians: Guy de Pourtalès, *Louis II de Bavière, ou Hamlet roi*; Fauchois, *Beethoven*. Lives of kings: G. Goyau, *Saint Louis*; Maître Henri-Robert, *Louis XVI*; Almérás, *Louis XVII* (believes that the child actually died in the Temple prison). Lives of saints: Fr. Jammes, *Cardinal Lavignerie*; H. Lavedan, *M. Vincent, aumônier des galères*. Lives of all sorts: Ch. Maurras, *Théodore Aubanel*; E. Magne, *Nicolas Poussin, premier peintre du roi*; Delteil, *La Fayette*; R. Chantemesse, *Roman inconnu de la Duchesse d'Avranches*; Dr. Lucian Graux, *Le Docteur illuminé* (Raymond Lulle). Also collective works: L. Madelin, *Les Hommes de la Révolution*; and G. Doutrepont (a Belgian), *Les types populaires de la littérature française* (2 vol.). Also literary autobiographies continued to pour in: H. Béraud, *Gerbe d'or*; Ph. Soupault, *Histoire d'un blanc*; Julien Benda, *Mon premier testament* (showing how emotions dictate opinions); Colette, *La naissance du jour* (after many other volumes of reminiscences); and the eighth and last volume of Jules Renard's *Diary* (giving souvenirs of Moréas, Porto Riche, Barrès, Guitry, Capus, Tristan Bernard, etc.).

HISTORY OF LITERATURE AND CRITICISM. The ninth volume of F. Brunot's *Histoire de la langue française (Révolution et Empire)* came out. The collective study of Doutrepont, *Les types populaires de la littérature française* has been mentioned before. Then, for the mediæval period one may call attention to an adaptation in modern French of the *Roman de la Rose* (by André Mary), and to the fourth and last volume of Langlois, *Vie en France au Moyenâge*; in the sixteenth century, A. Garnier's considerable work in three volumes, *Agrippa d'Aubigné et le parti protestant*. In the seventeenth century, two more volumes of Abbé Bremond's remarkable *Histoire du sentiment religieux en France depuis les guerres de religion*, which deals with literature as well as theology; an excellent volume by an American (a graduate of Smith College), M. E. Storer, *La mode des Contes de Fées, 1685-1700*; and the original *Vie de Racine* by Mauriac. In the eighteenth century: Bertaut, *Égéries du XVIIIe siècle*; J. Legras, *Diderot et l'Encyclopédie*; R. Hubert, *D'Holbach et ses amis*; two new volumes of the important *Correspondance de Rousseau*; A. Schinz, *Pensée religieuse de Rousseau et ses récents interprètes*; F. Gaiiffe, *Mariage de Figaro* in the excellent new collection. *Les grands événements littéraires* (published by Maltère, Amiens). In this collection also appeared several volumes concerning the early nineteenth century; *Le Père Goriot*, *Les Orientales*, and *Madame Bovary*; also earlier *Tartuffe*. The Stendhal edition continued to arouse great interest, P. Valéry giving a preface to the novel *Lucien Leven*; P. Hazard has a *Stendhal* (in collection, *Vies illustres*).

Viatte had a long work on *Les Sources occultes du Romantisme*, and the well-known

Pierre Lasserre had *Des romantiques à nous*. V. Hugo inspired several volumes of importance; not only the charming biography by Raymond Escholier but two *Jeunesse de V. Hugo*, by Lebreton, and by Benoit-Lévy; moreover Lacretelle had the very searching *Vie politique de V. Hugo*. Hélène Altszyler had *Genèse des plans et caractères de Balzac*. V. Giraud had a notable *Taine*; and Henri Tronchon a discriminating *Renan et l'étranger*; while Calman-Lévy published two volumes of *Correspondance de Renan*. Mention may be made here of L. Lemonnier's double and very modern work, *Edgar Poe et la critique française, 1845-75*, and *Les Traducteurs d'E. Poe*. A volume unjustly left unmentioned in 1927 may be mentioned now; it is a very suggestive study of Prof. Leonard Schwartz, Stanford University, that was published in Paris, *Imaginative interpretation of the Far East in modern French Literature 1800-1925*. For the twentieth century: Rachilde, *Jarry ou le surmâle des lettres*; Pierre Quint, *Comment travaillait Proust*, and *Le comique et le mystère chez Proust*; and Ch. Daudet's *Répertoire des personnages d'a la recherche du Temps perdu*. E. Bouvier's little volume, *Initiation à la littérature d'aujourd'hui* was destined to solve many mysteries to many who stand before modern artistic creation as before a closed door. F. Mauriac had *Essai sur le Roman* which aroused some discussion; P. Claudel discusses poetry in *Positions et Propositions*; and Émile Herriot (literary critic of *Le Temps*) an excellent *Art de former une bibliothèque*.

EVENTS. The Grand Prix de Littérature, offered by the Academy went in 1928 to Edmond Jaloux, for *L'ensemble de son oeuvre*. He published *Branche morte* (see above). For other literary prizes, and for commemorations, see above. Among the dead of the year: François de Curel (q.v.), of the Academy; Aulard, the great modern authority on the French Revolution and its literature; Ed. Estève, author of *Byron et le Romantisme française*. Two public meetings of the Academy were held; to receive M. Mâle (June) and Paléologue (December). Gustave Simon, the president of the Fondation V. Hugo and in charge of the publication of the National edition, died in January. Edmond Haraucourt was elected to take his place.

See PHILOLOGY, MODERN.

FRENCH SOMALI (sô-mâlê) COAST or FRENCH SOMALILAND. A French colony in Africa on the Gulf of Aden between Italian Eritrea and British Somaliland. Estimated area, 5790 square miles; estimated population in 1926, 56,059. The port of Djibouti is the seat of the Government. Its population in 1921 was estimated at 8366, of whom 354 were European (190 French). After 1922 the Government introduced a public elementary school system at the capital, supplanting the mission school which had been in operation for 20 years. The budget for 1928 balanced at 13,002,000 francs. The country has practically no industries and very little agriculture. The main sources of wealth are commerce, inland trade, and coast fisheries. The imports in 1926 amounted to 457,751,424 francs and the exports to 401,543,750 francs. The chief exports are ivory, coffee, hides, and skins. The chief imports are cotton goods, butter, coal, and sugar. A large share of the exports of Abyssinia pass through the port of Djibouti, which is connected by a railway 485 miles long with Addis Abeba.

The colony is under a governor assisted by an administrative council.

FRENCH SUDAN. A French colony comprising the valley of the Upper Senegal, some two-thirds of the course of the River Niger, and a large part of the Sahara Desert within the sphere of Algeria. Bounded on the east by the Territory of the Niger; on the west by Mauretania, the Falmé River, and French Guinea; on the south by the Upper Volta and the Ivory Coast; and on the north by the territory of Algeria. Area, estimated at 360,331 square miles; population, estimated in 1926 at 2,634,982. The capital is Bamako, with 15,596 inhabitants. Other important towns and their populations are: Kayes, 9866; Timbuktu, 5485; and Sikasso, 9197. All the chief towns have regional or urban schools. The active crops include groundnuts, millet, corn, cotton, rice, sesame, rubber, and kariti; also many cattle are raised. Native industries are of some importance, including the making of pottery, jewelry, and leather, and weaving. The total imports in 1926 amounted to 85,907,623 francs and the total exports to 6,216,551 francs. The chief imports were cottons, foodstuffs, and metal-work; and the chief exports, groundnuts, cattle, rubber, gum, kapok, skins, and wool. The budget for 1927 provided for 39,600,000 francs. There is a railway connection with the coast over a line 745 miles in length. The colony is under the Governor-General of French West Africa (See FRENCH WEST AFRICA).

FRENCH WEST AFRICA. French West Africa, comprising the Atlantic coast colonies of Mauretania, Senegal, French Guinea, and the Ivory Coast, the colony of Dahomey on the Gulf of Guinea, and the interior colonies of French Sudan, Upper Volta, and the Territory of the Niger, includes the river basin of the Senegal, nearly all the upper and middle Niger Basin, the basin of a large number of rivers emptying into the Gulf of Guinea, and the southern part of the Sahara region. It had an area of 1,247,191 square miles and a population in 1926 of 13,541,611, as compared with a total area of all the French protectorates and mandated territories of 10,255,510 square kilometers and a total population of 55,631,184. So diversified is the native population of French West Africa that official French reports classify the inhabitants under more than 50 groups. Some very extensive areas of this region are practically deserted, while others have a population as high as 60 persons to the square kilometer.

The colonies had the following populations: Senegal, 1,318,287; Guinea, 2,095,988; Ivory Coast, 1,724,545; Dahomey, 979,609; French Sudan, 2,634,982; Upper Volta, 3,240,147; Mauretania, 289,184; Niger, 1,218,717; Dakar and Dependencies, 40,152. The total European population was 15,399, of whom 11,099 were French. The natives in general live by farming and stock-raising. Up to 1928, few useful minerals had been discovered and the output was comparatively small in value. There were in 1926-27, 292 village schools with 24,457 boys and 333 girls, 77 urban schools with 3507 boys and 1223 girls, and eight high schools with 558 pupils for general instruction, and 352 for manual instruction. There were also 144 evening schools for adults with 5790 pupils. The expenditure on education was 11,775,000 francs.

The financial estimates for 1928 placed the entire revenue at 749,730,000 francs, including

214,730,000 francs for the general budget, 350,000,000 francs for the local budgets, and 185,000,000 for the supplementary budget; the total expenditure was estimated at 709,730,000 francs, of which 214,730,000 was for the general budget, 330,000,000 for the local budgets, and 165,000,000 for the supplementary budget.

The imports into the colonies in 1926 amounted to 1,550,729,015 francs, while the exports totaled 1,412,028,809 francs. Imports amounting in value to 792,406,426 francs came from France and of the exports 527,347,423 went to France. The imports into French West Africa are mostly food substances, textiles, mechanical implements, and beverages; the exports from these colonies are chiefly fruits, oils, and oil seeds, as well as rubber, cotton, cocoa, and timber. In 1926, 21,369 vessels of 17,144,123 tons entered and cleared the ports of French West Africa. In the same year there were 1866 miles of railway open to traffic.

A governor-general, assisted by a council, is at the head of the administration of all French West Africa. The seat of government is at Dakar. Each colony is under a lieutenant-governor subordinate to the governor-general. Governor-General in 1928, M. Carde, appointed Feb. 20, 1928.

FRIENDS, RELIGIOUS SOCIETY OF. A mystical religious sect which originated in England in the middle of the seventeenth century. The founder of this religious society was George Fox (1624-1691), who visited America in 1672. The first Yearly Meeting in the United States was held at Newport, Rhode Island, in 1661, and has continued under the name of New England Yearly Meeting. Others established within the next forty years are known as Baltimore, Philadelphia, New York, and North Carolina Yearly Meetings, and these are composed of quarterly and monthly meetings having one or more congregations. In the nineteenth century, others were formed as migration moved westward. The largest body, known as the Orthodox Group, organized what is known as the Five Years' Meeting in 1902, which meets as a delegate body every five years, and in 1928 consisted of twelve yearly meetings, with a membership of approximately 81,000. Its headquarters are at Richmond, Indiana. The work of the various departments, such as Home and Foreign Missions, Peace, Religious Education, etc., was under the direction of executive committees and secretaries of boards. *The American Friend*, a weekly religious journal, is published at headquarters, as is also literature for the Bible schools of the Five Years' Meetings.

The Five Years' Meeting also maintains seven colleges for higher education as follows: Earlham, Richmond, Ind.; Penn. Oskaloosa, Iowa; Guilford College, Guilford, N. C.; Wilmington, Wilmington, Ohio; Whittier, Whittier, Calif.; Friends University, Wichita, Kans.; Nebraska Central, Central City, Nebr. Haverford College, Haverford, Pa., is maintained by Philadelphia Yearly Meeting; and Pacific College, Newberg, Oreg., by Oregon Yearly Meeting, with 3295 members, not a part of the Five Years' Meeting. Another Orthodox body not a part of the Five Years' Meeting is the Ohio Yearly Meeting, with a membership of 5137 in 1928.

The Liberal Branch of the Religious Society of Friends includes seven Yearly Meetings federated in the Friends' General Conference, which

meets in the even numbered years and conducts work in religious education, social service, and advancement of Friends' principles. The separation of 1827 centred around the doctrinal issues of that day and the preaching of Elias Hicks. The General Conference emphasizes the freedom of the individual to follow the voice of God in his own soul rather than any individual or church authority. The membership in 1928 was 16,560, and there were 138 meetings. Publications include the weekly periodical, *Friends' Intelligencer*, and a monthly magazine for children, *The Scattered Seeds*. The society conducts several secondary schools, and Swarthmore College, Swarthmore, Pa., was founded by it.

The tendency, of recent years among the Friends in America, has been more and more toward working together and with English Friends. Among the united undertakings were: The Young Friends' Conference; Woolman School, founded in 1915 as a school for religious and social study; the American Friends' Service Committee, formed in 1917 for war-relief work, and since the War conducting Friends' Centres at home and abroad for international understanding and reconciliation between conflicting nations, races, and other groups. A Conference of all Friends in America was called to meet at Oskaloosa, Iowa, in 1929.

FROST, ARTHUR BURDETT. American illustrator, caricaturist, and author, died at Pasadena, Calif., June 23. He was born at Philadelphia, Pa., in 1851, and at 15 worked as an engraver and afterward as a lithographer; he was, in the main, self-taught. He was employed by the New York *Graphic*, and in 1876 changed to Harper & Brothers, where he was associated with Abbey, Reinhart, and Alexander. Frost's works show thorough draftsmanship, honest, healthy, and delightful humor, and convincing naturalness. His first illustrations for a volume entitled *Out of the Hurly-Burly* (1872) attracted much notice. Other important illustrations were found in Stockton, *Rudder Grange* (1879); Octave Phonet, *Stories of a Western Town* (1893); Bunner, *Stories of a New York House* (1887). Although his work was called typically American, it was well liked in England, especially his illustrations for Lewis Carroll's *Hunting of the Snark*. His drawings of animals and negroes were racy of the American soil. Mr. Frost was also a writer of humor of considerable distinction. His books were: *Stuff and Nonsense* (1888); *Bull Calf and Other Tales* (1892); *The Golfer's Alphabet* (1898); *Sports and Games in the Open* (1899); *Book of Drawings* (1905); *Carlo* (1913).

FROTHINGHAM, frōth'ing'hām, LOUIS ADAMS. Member of Congress from Massachusetts, died August 23, at North Haven, Me. He was born at Jamaica Plain, Mass., July 13, 1871, and was graduated from Harvard College in 1893, and from the Harvard law school three years later. He was admitted to the Massachusetts bar, and during the Spanish-American War, in 1898, served as second lieutenant in the United States Marine Corps. After the War he returned to his law practice in Boston, and in 1901 he was elected to the Massachusetts House of Representatives, serving until 1905, and being speaker in 1904 and 1905. He was defeated as Republican candidate for mayor of Boston in 1905, but in 1908 he was elected lieutenant-governor of Massachusetts. In 1911 Mr. Frothingham was

unsuccessful as Republican nominee for governor. During the early years of the World War he was colonel of the Thirteenth Regiment Massachusetts State Guard, and in 1918 he was commissioned major in the United States Army. He was elected to the United States House of Representatives in 1920, and to succeeding congresses. He served several terms as an overseer of Harvard University, and lectured at that institution on the Government of Massachusetts from 1913 until 1915. He wrote *Brief History of the Constitution and Government of Massachusetts* (1916).

FRUIT CROPS. See HORTICULTURE.

FRUIT MOTHE, ORIENTAL. See ENTOMOLOGY, ECONOMIC.

FRUIT MOTHS; FRUIT WORM; ETC. See ENTOMOLOGY, ECONOMIC.

FRUITS. See HORTICULTURE.

FUEL. In the fall of 1928 three large fuel conferences were held. These were the Second National Fuels Meeting of the American Society of Mechanical Engineers, the London Fuels Conference, and the Second International Conference on Bituminous Coals at Pittsburgh. At each of these meetings, and especially the last two, much attention was given to low-temperature carbonization of coal. While there had been no startling developments in any of the numerous processes during the year, steady progress had been made toward commercialization with some of these. In Great Britain there were 16 plants in operation capable of dealing with ten tons or more daily; with one exception these produced a smokeless domestic fuel. This exception was the Dunston plant at Newcastle-on-Tyne where the low-temperature coke and gas were burned under the boilers of the electric-generation station. The only by-products in this case were tar oils.

In the United States, interest in low-temperature distillation of coal was increasing. Much experimental work was going on and numerous studies were being made. Some of these coal distillation plants were adjuncts to central electric stations and others were independent plants turning out low-temperature coke for domestic use and various by-products. Certain of the existing processes were better suited to the former and certain to the latter. Among the installations in operation were the McEwen-Runge Process at the Lakeside power station in Milwaukee, the McIntire Process at Fairmont, W. Va., the Parr-Laing Process at Urbana, Ill., the Greene-Laucks Process at the Old Ben Coal Corp., Waukegan, Ill., the Wisner (carbocite) Process operated in conjunction with the electric station at Philo, Ohio, and the K. S. G. Plant at New Brunswick, N. J.

With one exception these installations may be said to have reached a semi-commercial stage at the end of the year, although the plant at Philo, where the coke was sold for domestic use and the gas burned under boilers, had met with sufficient success to warrant a second 50-ton unit. The K. S. G. Plant of the International Coal Carbonization Company at New Brunswick, N. J., went into operation. Because of its magnitude in contracting to furnish a billion cubic feet of gas per year to the Public Service Gas & Electric Company, and the proven success of the process in Germany, it was by far the outstanding plant of its kind in the United States. Construction work on a second K. S. G. plant had been started at the end of the year.

This was to be in connection with the Lukens Steel Company at Coatsville, Pa.

See CHEMISTRY, INDUSTRIAL; POWER PLANTS, STEAM.

FULLER, CRYSTAL EASTMAN. American leader in feminist and radical activities, died at Erie, Pa., July 28. She was born at Marlborough, Mass., June 25, 1881. She was a member of the Vassar College class of 1903, studied at Columbia University, 1904, and was graduated from the law school of New York University, 1907. She became connected with the Pittsburgh accident survey of the Russell Sage Foundation, and in 1909 was the only woman member of the New York State employers' liability commission. She was made secretary of the commission and drew up its report in 1911. In the same year she was married to Wallace Benedict, an engineer, and went to Milwaukee, Wis., to live. There she became leader of the Wisconsin woman suffrage workers. Her first marriage was terminated by divorce, and she was married to Walker Fuller, an English concert manager. She returned to New York and was chairman of the New York State branch of the Woman's Peace Party, a pacifist organization, during the World War. She was identified with organizations and movements of advanced radicalism, and in 1919 went to Hungary to convey greetings to the Soviet Government of that country from American sympathizers. With her brother, Max Eastman, she edited *The Liberator*, a paper that ceased publication.

FULLER, LOIE. American dancer, died at Paris, January 2. She was born at Fullersburg, Ill., in 1870. As a child actress she appeared at the Academy of Music, Chicago, and subsequently played a number of characters (including Ustane in *She*) before devoting herself exclusively to her specialty, dancing, in which she attained international fame. Her first original success was achieved in the "serpentine dance," with novel lighting effects produced by the throwing of lights on complicated moving silk draperies. After touring America she went to England, where she established a school of dancing. When she had trained a company she went to France, in which country she passed the greater part of the rest of her life. In 1900 she established her own theatre in Paris. Her two greatest successes were the "serpentine dance," already mentioned, and the "dance of fire." Miss Fuller established a firm place for herself in France as an artist, and she numbered among her friends such men and women as Sarah Bernhardt, Rodin, Flammarion, Catulle Mendes, Jean Lorrain, and the painter, Cheret; the last-named painted a portrait of her which is ranked among his masterpieces. She wrote *Fifteen Years of a Dancer's Life* (1913).

FUR INDUSTRY. See ALASKA; CANADA.

FURNACES. See BOILERS.

GABUN. See FRENCH EQUATORIAL AFRICA.

GAIRDNER, WILLIAM HENRY TEMPLE. English churchman and scholar in Arabic, died at Cairo, Egypt, May 22. He was born at Ardrossan, Scotland, July 31, 1873, and was educated at Rossall and at Trinity College, Oxford. Soon after leaving Oxford he became a missionary, and in November, 1899, went to Egypt as a representative of the Church Missionary Society. He had begun the study of Arabic at Oxford, and continued it at Cairo, and became recognized as one of the foremost Arabic

scholars. He founded a language school at Cairo for the service of his fellow missionaries. He wrote, among other works: *The Phonetics of Arabic*; *Egyptian Colloquial Arabic*; *Arabic Syntax*; *Bible Dramas (Joseph and His Brothers; Passover-night; Saul and Stephen; King Hezekiah, a Tragic Drama)*.

GALLIVAN, JAMES AMBROSE. American congressman, representative of the Twelfth Massachusetts District, died at Arlington, Mass., April 3. He was born at Boston, Mass., Oct. 22, 1866, and was educated at the Boston Latin School and Harvard University, graduating from the latter institution in 1888. For some years after his graduation he worked as a newspaper reporter. He entered politics as a member of the Massachusetts House of Representatives, 1895-96, and was a member of the State Senate, 1897-98. From 1901 to 1914 he was street commissioner of Boston, and from 1914 until his death, with the exception of one two-year term, he was a member of the national House of Representatives. He was a Democrat in politics and one of the leaders of his party in his state and the nation. Mr. Gallivan wrote: *The History of the Ancient Codfish* (1895) and *A History of Boston's Streets* (1904).

GAMBIA. A British protectorate and colony in West Africa at the mouth of the Gambia River. Area of Gambia proper, four square miles; population about 10,000. Area of protectorate, 4130 square miles; population in 1921, about 200,000. The capital is Bathurst, on the Island of St. Mary (population, 9227 in 1921). In 1926 there were seven elementary government-aided schools with 1637 pupils enrolled. In 1926 the imports totaled £656,307 and the exports, £904,166. The chief imports were wearing apparel and foodstuffs and the chief exports, ground-nuts, hides, and palm kernels. The public revenue in 1926 was £214,181 and the public expenditure, £213,643. The public debt amounted to £103,601. The tonnage of vessels entered and cleared in the foreign trade in 1926 was 1,252,796 tons, of which 771,022 were British. There are no local railways. The colony is administered by a governor, an executive council, and a nominated legislative council containing an unofficial element. Governor in 1928, Sir John Middleton.

GARBAGE AND REFUSE DISPOSAL.

For new installations incineration as a means of garbage and refuse disposal continued to gain, but established plants for disposal by feeding to hogs and by reduction for recovery of grease and fertilizer were holding their own. A seeming exception to this as regards disposal by feeding to hogs was afforded by the city of Providence, R. I., which put an incinerating plant for garbage and refuse in operation in 1928. There was, however, no systematic plan for disposal by hog feeding at Providence, in the sense that there was at Flint, Mich., and Los Angeles, Calif., as mentioned further on. Instead, hog feeding at Providence was carried on by various owners of hog farms who collected the garbage under the supervision of the Board of Health. This left the rubbish and miscellaneous refuse for separate collection and disposal. In 1927 collection and disposal of both garbage and refuse in Providence was put in the hands of the commissioner of public works and during the summer the construction of an incinerator was begun. The incinerator went into operation

in December, 1927. According to an article in *The American City* for August, 1928, the incinerator had a capacity of 160 tons per 24 hours. It is located about a half-mile from the city hall, giving an average haul of the garbage and refuse of about a mile from the residence portion of the city. The garbage and refuse are collected by trucks on each of which there are two 2-ton containers. At the disposal plant these containers are shifted in a garage to a car on a track and moved to a point beneath the crane. The latter lifts the containers and dumps their contents into the furnace. Ashes from the furnace grates are dumped into cooling pits in the basement and from these are dumped in turn into steel cars which are run on an industrial railway and lifted up to elevated storage bins from which the ashes are said to be taken to city parks for use as fertilizer. Commercial as contrasted with domestic refuse is brought to the incinerator by the proprietors of industrial plants and other business concerns.

A similar incinerator was put in operation in the Borough of Queens, New York City, in 1928, being the ninth incinerator of the same general type constructed in that borough within seven years. In the adjacent borough of Brooklyn contracts were let the latter part of 1928 for three 500-ton incinerators, to be operated by the contractor for the collection and disposal of garbage and refuse for that particular borough. In the borough of Manhattan there were already several large incinerators, each burning the garbage and refuse from adjacent areas. These had been built in line of recommendations of an investigating committee which advised incineration as a means of disposal of the garbage and refuse of the entire city. Near the end of 1928 the Board of Estimate and Apportionment authorized the expenditure of \$5,000,000 additional for four new incinerators. These, together with those already mentioned, will go far toward doing away with the practice of dumping garbage and refuse at sea, resumed a few years previously. Prior to that resumption, for many years the garbage of the larger part of Greater New York had been disposed of by the reduction process, under contract, as noted in earlier issues of the YEAR BOOK.

Chicago put an incinerator of 600 tons capacity in operation during 1928. It consists of six 100-ton furnaces grouped together. It will dispose of garbage and refuse from the northwestern part of the city. A garbage reduction plant, originally built many years ago by a company and latterly taken over by the city, will be relieved of the garbage collected in the part of the city tributary to the new incinerator. New Orleans contracted for three new incinerators during the year of which two will have capacities of 165 tons each and one of 50 tons, in all cases based on a 16-hour operating day. In all three incinerators the garbage and refuse delivered will be removed from the truck bodies by traveling cranes and conveyed for dumping directly into the furnace or else the truck bodies will be stored on the charging floor until a furnace is ready for receiving their contents. New Orleans had had two incinerators in operation for a number of years past.

Two notable examples of garbage disposal by feeding to hogs were reported by the cities of Flint, Mich., and Los Angeles, Calif., where the

method had been practiced for some time. The feeding plant at the Flint disposal plant was owned and operated by the city, while the one receiving the garbage of Los Angeles was owned and operated by a contractor who paid the city for garbage delivered to the loading station and hauled it by rail some 50 miles to a hog ranch. The hog farm owned and operated by the city of Flint is located some 12 miles from the city. The operation of the plant is under the direction of the city engineer. On Nov. 1, 1928, there were about 3500 hogs at the Flint feeding plant.

The contractor for the disposal of the garbage of Los Angeles utilized some 40,000 hogs for the purpose. A ten-year contract warranted the contractor going to considerable expense in fitting up the hog ranch for handling the garbage and the wastes in a thoroughly sanitary manner. One of the chief problems involved at any plant for the disposal of garbage by feeding to hogs is the collection and disposal of the garbage rejected by the hogs and of the manure which the hogs produce, the two together making up a large percentage of the garbage delivered to the plant. Difficulties having been experienced by the Los Angeles contractor in preparing these wastes for use as fertilizers by composting, a system of open-air drying was adopted. This is done on two large areas, each covered with 4 inches of concrete, the two having a combined area of more than four acres. The waste from the hog feeding floors is gathered by scrapers, loaded into trucks, and taken to and spread over the drying floors. At intervals the waste on these floors is turned over by plowing. When dry the wastes are gathered into windrows, loaded into carts, and taken to a screening and grinding plant. The material is first passed by means of a belt to and over a magnetic pulley. The latter holds tin and other metal to the belt until the fertilizer material has fallen off when the metal is delivered into a chute. Vibrating screens separate the finer material from bones and other coarse matter, these latter going to pulverizing hammers or grinders. Material from the grinders is drawn by a vacuum into a blower and delivered to a second vibrating screen finer than the first one. Both the ground material and the finer material that does not require grinding go to storage and are finally used as a fertilizer. Mechanical equipment is a feature of the entire hog-feeding plant (for detailed description of the latest improvements at the Los Angeles disposal plant, see *Engineering News-Record*, May 3, 1928, p. 692).

Some of the garbage-reduction plants are owned and operated by the cities which they serve and some by private contractors. A combination of the two was practiced at Syracuse, N. Y., the city owning the plant and leasing it for operation. A five-year lease expired in 1928 and after city operation for a brief period was renewed for another five years. In the nearby city of Rochester, the reduction plant is both owned and operated by the city. Both the Syracuse and Rochester plants were originally built and for many years operated by a private company, but were subsequently taken over by the city in each case.

Fermentation of garbage under a system in use in a number of Italian cities for some years past, known as the Beccari system, was put in use at Dunedin, Fla., the latter part of 1928. The only other American town to use this process

was Scarsdale, N. Y., where a plant was put in operation a few years ago (see YEAR BOOK for 1923, p. 274). The principal feature of the Beccari process as practiced in Italy was the placing of the garbage in bins or tanks and allowing it to ferment for some thirty days, the residue being available for use as fertilizer. Due perhaps to the differences in both garbage and climate, the plant at first built at Scarsdale did not work satisfactorily. It was closed as a result of a court order, on a nuisance complaint, and for a time the garbage of Scarsdale was burned at an incinerator in a neighboring town. Subsequently the Beccari plant at Scarsdale was rebuilt, with changes said to give satisfactory results.

GARDENING. See HORTICULTURE.

GARDNER, WASHINGTON. American public official, died at Albion, Mich., March 31. He was born in Morrow County, Ohio, Feb. 16, 1845. After enlisting in the Union Army in the Civil War at the age of 16 and receiving a severe wound at the battle of Resaca, he returned home and resumed his studies. He was graduated from Ohio Wesleyan University in 1870 and from the Albany Law School in 1876. He practiced his profession at Grand Rapids, Mich., for one year, and taught at Albion College, 1889-94. He was Secretary of State of Michigan, 1894-99, and a member of the United States House of Representatives, 1899-1911. From 1921 to 1925 he was Commissioner of Pensions. Mr. Gardner was prominent in the affairs of the Grand Army of the Republic and served as commander-in-chief, 1913-14. He was a Republican.

GARY COLLECTION, SALE OF. See ART SALES.

GAS, ILLUMINATING AND FUEL. The manufactured gas industry, in 1928, led the fuel industries of the United States in sales, according to an analysis made public by the American Gas Association. The following table of preliminary estimates prepared and given out by the industries themselves indicates the percentage increase or decrease in fuel sales for 1928 as compared with 1927:

Coke	+2.
Bituminous Coal	+4.8
Anthracite Coal	-5.
Crude Petroleum	+1.
Manufactured Gas	+3.8

The gain in manufactured gas, the Association stated, was in the face of a change from manufactured to natural gas in a considerable part of the country's territory during 1928, including some large cities.

The preliminary estimates of sales of illuminating and fuel gas in 1928, as compiled by the American Gas Association, indicated an increase of 18,000,000 cubic feet, 3.82 per cent, over the previous high total, with sales of 490,000,000,000 cubic feet, distributed as follows: 338,000,000,000 cubic feet for domestic consumption; 147,000,000,000 cubic feet for industrial and commercial uses, and 5,000,000,000 cubic feet for miscellaneous purposes.

During the year 1928, according to the same source, the use of gas for commercial and industrial purposes continued its phenomenal increase, which amounted to 7.75 per cent more than 1927 totals. Customers had reached a total of 11,800,000, an increase of 350,000 for 1928

alone; miles of main had increased to 93,500; operating revenue totaled \$519,000,000, or an increase of \$18,000,000 for the year; while investments had grown to \$3,000,000,000.

Although 1927 was a year dominated by business recession in which the general trend in many of the leading industries was toward a decline in production, the sales of gas for industrial and commercial purposes registered an increase of nearly 8 per cent, while the percentage increase in domestic sales was less than 2 per cent. Coal gas manufactured was increased from 71,000,000,000 to 81,000,000,000 cubic feet or 15 per cent in production; natural gas purchased and mixed with manufactured gas for public use increased by nearly 15 per cent; and coke-oven gas purchased and distributed by manufactured gas companies rose to more than 91,000,000,000 cubic feet, or about 8 per cent more than the output for 1926. A marked change had been taking place in gas production as reflected in the fuel requirements of the industry, in that the use of anthracite coal had been reduced to a negligible amount, showing a 50 per cent decline between 1926 and 1927, while there was some increase in the use of bituminous coal, and a larger increase in the use of coke, especially as generator fuel for water gas and as bench and boiler fuel, exclusive of the coke-oven gas purchased by distributing companies for public use.

This continued expansion and the progress which was occurring in the industry were accompanied by stability, and prospects point to continued growth in new and wider fields, in spite of the fact that in 1928 gas had more than 21,000 separate uses in industry, for research along technical and engineering lines, and also in gas utilization, marketing, and service activities the industry was experiencing new vision and realization of the large potentialities for development in the future.

In Germany, the collieries were promoting a scheme to effect the distribution of gas produced at or near the mines over the greater part of the country. The enterprise, which involved a huge expenditure of capital, was worked out to utilize coke and its by-products, and the operation was arousing considerable interest. An extensive system of mains was laid from the Ruhr and Westphalia toward Hanover, while extensions were to be made later to Berlin and Leipzig. Similar mains were to be laid from Lower Silesia and other coalfields, and if it was found that lignite gas was suitable for the purpose, it would be included in the distribution by a system of mains which would cover practically the whole of Germany. It was stated that the gas would be distributed mainly for industrial purposes, since the municipal gas undertakings refused to associate themselves with the colliery enterprise. The principal main from the Ruhr was of wrought iron and had a diameter of 32 inches, a thickness of a little less than $\frac{3}{8}$ -inch, to resist a pressure of 3 atmospheres. As the distance increases the diameter is diminished and the pressure augmented to 15 atmospheres at Hamm.

GAS AND OIL ENGINES. See INTERNAL COMBUSTION ENGINES.

GAS, NATURAL. The natural-gas industry, which showed a slow but steady increase in 1926, kept pace with the petroleum industry in 1927, reporting a record output, marketed at

reduced prices, according to the United States Bureau of Mines. The total amount of natural gas produced and delivered to consumers in the United States in 1927 amounted to a total of 1,445,428,000 M cubic feet, an increase over 1926 of 132,409,000 M cubic feet, or 10 per cent. Of this amount 296,036,000 M cubic feet were used by domestic consumers in the United States, an increase of but 2 per cent; while 1,149,208,000 M cubic feet represented the total consumption for industrial purposes, an increase of 12 per cent over the previous year. The average consumption per domestic consumer continued to decrease and in 1927 amounted to 74,300 cubic feet, as compared with 77,500 cubic feet in 1926, due no doubt to more efficient use. The price paid for natural gas by domestic consumers continued its steady increase, rising from 58.4 cents in 1926 to 60.8 cents in 1927, the latter price being nearly twice that paid in 1927. Ohio led the States in the number of domestic consumers, followed by California and Pennsylvania, while Indiana and Missouri were the only States which reported a decrease.

The total consumption by industrial users was divided about equally between field use, as for drilling, pumping, etc., and industrial uses, including gas burned in the production of carbon black, and gas used by manufacturing establishments. The increase in consumption of gas for field purposes occurred in Oklahoma and Texas, due to increased activity in drilling in those States; the increased consumption for other industrial purposes occurred principally in Louisiana, where there was a noticeable increase in use as fuel by refiners, and in the Panhandle district and the Gulf-coast district in Texas, for manufacture of carbon black and in industrial plants, respectively. The price of gas for industrial purposes showed little change, as had been the case for 10 years, in contrast to the steady and continued increase in cost to domestic consumers.

The production of natural gas in Canada showed an increase of 11.3 per cent for the year, according to statistics issued by the Dominion Bureau of Statistics. Total output was 21,376,791 M cubic feet, valued at \$8,043,010. Alberta led the four provinces which produced Canada's commercial natural gas, the output being 13,434,621 M cubic feet, followed by Ontario with 7,311,215 M cubic feet, New Brunswick with 630,755 M cubic feet, and Manitoba with 200 M cubic feet ranged from 20 cents in New Brunswick to 59 cents in Ontario and 27 cents in Alberta.

GASOLINE. See **CHEMISTRY, INDUSTRIAL; PETROLEUM.**

GENERAL EDUCATION BOARD. See **UNIVERSITIES AND COLLEGES.**

GEOGRAPHICAL SOCIETY, AMERICAN. The oldest geographical society in the United States, founded in 1852, "to collect and disseminate geographical information by discussion, lectures, and publications; to establish in the chief city of the United States a place where may be obtained accurate information concerning every part of the globe; and to encourage such exploring expeditions as seem likely to result in valuable discoveries in geography and related sciences."

In 1928 the leading activity of the Society was in the publication field; its *Geographical Review*, a quarterly periodical, was devoted to

original articles dealing with exploration and geographical research and reviews of the most significant geographical books; numerous maps were issued, and other publications consisting of books and pamphlets which fall into six series: *Research Series*, comprising specialized monographs; the *Special Publications*, having a general appeal; the *Library Series*, devoted primarily to collections of the Society; the *Outing Series*, of which two volumes had appeared up to the end of 1928: a *Trampers' Guide to the Palisades Interstate Park* and a *Trampers' Guide to the Vicinity of New York* belong to the fourth series; the fifth series is known as the *Map of Hispanio America Publications* and includes many basic maps of Hispanic America on a scale of 1:1,000,000 which are in conformity with the International Millionth Map of the World; of the sixth series, *Oriental Explorations and Studies*, dealing with the explorations of Prof. Aloisi Musil in northern Arabia, six volumes appeared during 1928.

The Society maintains a specialized geographical library and sponsors six regular lectures annually by distinguished explorers or geographers, for members and their guests. Contributions to the development of geographical science and exploration are recognized in the Society's election to honorary and corresponding memberships and in the bestowal of medals. The President for 1928 was John H. Finley, LL.D.; and the director was Isaiah Bowman, Ph.D. The Society's building is at Broadway and 156th Street, New York.

GEOGRAPHIC SOCIETY, NATIONAL. An organization founded in 1888 "for the increase and diffusion of geographical knowledge." During 1928 it continued its work in the field of research by sending an expedition to the Pavlof Volcano region off the Alaskan Peninsula for the study of the processes of volcanism there and their interrelation with eruptions and seismic disturbances elsewhere. The expedition was headed by Dr. Thomas A. Jaggar, volcanologist in charge of the researches in Hawaii, who, besides gathering much data which promised to aid in the forecasting of eruptions, discovered a number of new cones in the group, found some ice-ash jumbles of a type hitherto unknown, and explored a considerable area. Taken in connection with the work of the several expeditions of the Society to the Mt. Katmai region, under the leadership of Dr. Robert F. Griggs, which resulted in complete reports on the mightiest eruption of modern times and in the discovery of the Valley of Ten Thousand Smokes, the recent expedition brought together the fullest collection of data on Alaskan volcanic activity that exists anywhere. The expedition also found some evidence bearing on the continental-drift theory.

The task of constructing a pre-Columbian calendar for America, in order to link up with the present the eras of the Basket Maker and succeeding civilizations, discovered and studied by the eight expeditions of the Society to the Chaco Canyon country, under the leadership of Dr. Neil M. Judd, of the Smithsonian Institution, went forward steadily during the year. Dr. A. E. Douglass, University of Arizona, continued his search for timbers, beams, and stumps, whose rings were formed between the time of the Basket Makers and the present generation of trees. Since sun-spot cycles and other solar and

weather phenomena have a clear bearing on the prosperity of trees from year to year, with the connecting links established between trees of the present and the timbers of the days of the Bonitans, it would become possible to set up a calendar of events running back perhaps thousands of years in western America.

Work at the Society's solar observatory on Mt. Brukkaros, southwest Africa, was carried forward by the Smithsonian Institution's observers throughout the year. The attack upon the sun's radiation secrets from California, Chile, and Southwest Africa, simultaneously, was making possible an elaborate and accurate radiation history of the sun. The result of the year's observations was the accumulation of increasing evidence tending toward the establishment of the correctness of Dr. Abbot's theory that solar radiation and weather fluctuation are such closely related phenomena that the discovery of the laws of the one will mean the ability to forecast at long range the other.

The problem of the migratory warblers that summer in the United States and enjoy their winter vacations in Venezuela was the subject of an expedition sent to the latter country under the joint auspices of the Society and the Carnegie Museum of Pittsburgh, headed by Ernest G. Holt. Its purposes were to study their distribution among the grass, forest and other belts, attempt to throw new light on the origin and development of the migratory instinct, and trace the origin of many species that inhabit the coastal plain and the Orinoco Valley. This expedition also planned to give incidental attention to the flora and fauna of the country generally.

During 1928 bulletins dealing with the geographical backgrounds of current events were furnished to more than 600 newspapers, and weekly bulletins of timely geographical information were sent to about 35,000 school teachers. The Society also supplied material for press associations, and as a part of its educational work supplied a weekly ready-to-print service to about 1200 daily or weekly papers. Upon request, bulletins relating to the geography of Bible lands and mission fields were sent to about 80 church and Sunday-school periodicals and used by them in schools where Americanization work was in progress.

The chief activity of the Society in the diffusion of geographical knowledge is carried on through its official publication, the *National Geographic Magazine*. At the end of 1928 there was a membership of 1,200,000, representing every civilized nation. Officers for the year were: President and editor, Gilbert Grosvenor; vice president and associate editor, John Oliver LaGorce; treasurer, John Joy Edson; assistant treasurer, Herbert A. Poole; secretary, O. P. Austin; associate secretary, George W. Hutchinson; general counsel, Edwin P. Grosvenor; chairman committee on research, Frederick V. Coville; assistant editors, William Joseph Shorservice, J. R. Hildebrand. Headquarters are in Washington, D. C.

GEOGRAPHY. See EXPLORATIONS.

GEOLOGY. The year's contributions evidenced a general interest in field and laboratory research, also in speculative studies of those problems of earth origin and structure that lie beyond the reach of actual observation or instrumental tests. In this brief review it is only possible to select a few out of the great num-

ber of published articles and treatises for specific mention and to sketch very broadly the trend of study.

SOCIETIES. The fortieth annual session of the Geological Society of America was held at Cleveland, Dec. 29-31, 1927, where also assembled the Palaeontological Society and the Society of Economic Geologists. The subject of the presidential address by Arthur Keith was "Structural Symmetry in North America." The elements of symmetry which have fundamental importance in continental structure were stated to inhere in the arrangement and constitution of the mountain ranges; their origins may be traced back to very early periods of earth history, even to the pre-cambrian. The mountain uplifts and folds, according to Keith, came into existence through lateral pressure exerted from the boundary seas upon the continental margins, which have been the sites of extensive sedimentation. The Appalachian region in the east and the Cordilleran in western North America have been subjected to repeated thrusts, and the folds developed by such pressure were overturned away from the oceans, opposite to its source. Relative permanence of the continental margins throughout the repeated crustal adjustments may be regarded as an insurmountable obstacle to the Wegener hypothesis of continental drift, also in disagreement with it is the apparent increase of intensity of mountain building with the successive geological periods. In the Palaeozoic era crustal disturbances were strongest in the east, those of the Mesozoic and Cenozoic eras in the west. In Ordovician and Devonian times folds were developed in the Arctic region along the coast, but there were no corresponding representatives in the southern region.

The address of William A. Parks, President of the Palaeontological Society, "Some Reflections on Palaeontology," had to do with the mutual relations of palaeontology, biology and geology. Emphasis was placed on the teachings of paleontology in their bearing upon the theory of evolution; the order of appearance of life forms as revealed by the palaeontologist may be said to constitute the chief support for the orderly and progressive development of life. The chain of evidence has not been completed and the gaps in the record cannot be explained away altogether by appeal to the factor of migration. Change of environment must be regarded as an essential element in the mutation of species. Stable conditions lead to fixation of habit and close morphological adjustment; evolution is possible simply because habit can be changed and new tendencies developed. The doctrine of continuous evolution should not be taken in too rigid a sense, as some of the most significant advances in the history of life have occurred abruptly, as instanced by the evolution of the Metazoa from the Protozoa. Geological time is so long that the present manifold forms of life are not particularly remarkable, rather one may wonder that greater changes have not taken place in the stretch of antecedent periods to the beginnings of organic development in the Proterozoic era.

The President of the Society of Economic Geologists, F. L. Ransome, in his address, "Directions of Progress in Economic Geology," called attention to the need for more fundamental data, physical and chemical, about the processes concerned with ore deposition. Experimental

work was suggested as one way to secure the required information. Some of the important problems that challenge attention from the laboratory worker were noted, including the nature and capacity of the solutions which deposit metallic minerals, the behavior of silica in solution, the processes of magmatic differentiation in relation to ores, metasomatic replacement and sulphide enrichment. Geological students should maintain a questioning attitude rather than one of docile acceptance of pre-existing data and theories.

RECENT WORKS. Among the important contributions to regional geology may be mentioned *Geology of Mongolia*, by Berkey and Morrison who participated in the Andrews' expeditions of 1922 and 1923, in which they covered some 5000 miles of practically unexplored lands. The country has unique interest from the fact that it has not been submerged below the sea since Palaeozoic time, and the formations of later age are all of continental type. The development of land life, consequently, has been unbroken almost from the first appearance of air-breathing organisms, a condition favorable to an orderly evolution of types whose discovery may help to fill up some of the gaps in the palaeontological record. The present work lays the foundation for the systematic study of this remarkable region.

The later developments in geophysics are set forth briefly but comprehensively in a German work, *Lehrbuch der Geophysik*, to which the contributors include specialists in each field, like Sieberg for earthquakes, Born for vulcanology and crustal deformations, and Ansel for gravity and isostasy. The editor is Professor Gutenberg.

Another German publication that deserves mention is Sapper's *Vulkankunde*, a well-rounded treatise on the phenomena of volcanic activity and igneous intrusion and their multifarious geological bearings. The chapters on the chemistry of magmas and on magmatic differentiation pertain to a much broader field than is implied in the title of the book.

Among other treatises of recent issue may be mentioned *The Coral Reef Problem*, by W. M. Davis, who had collected first-hand observations of the coral islands of the Pacific, the Australian Barrier Reef, and some of the reefs of the Lesser Antilles, and lends support to Darwin's theory of the upgrowth of coral on sinking platforms, but with certain modifications for changing sea-level and temperature in Glacial times, as postulated by Daly, and for Molengraaf's views of a relatively local and isostatic subsidence in some instances.

Students of isostasy will welcome the work of that title under the authorship of William Bowie, who has been the most assiduous student and exponent of the theory in its application to geological processes.

A popular work, also designed for first students of geology, is *The Earth and its History*, by J. H. Bradley, Jr., a significant feature of which is the chapter dealing with the practical uses of the science. In the same category is *The Earth and its Rhythms*, by Charles Schuchert and Clara M. Le Vene. The latter book is to be commended for its clearness and accuracy, accomplished with sparing use of technical terms.

RELATION OF MOON'S SURFACE TO THE EARTH'S. Some interesting analogies between the physiographic features of the moon and the earth, par-

ticularly those found on the continent of Africa, were pointed out by E. H. L. Schwartz, who stated that giant craters of the lunar type occur widely and are well exemplified by Émil Kussi to the east of Lake Chad, by Geitai Gubib in southwest Africa and by the craters to the north of Lake Eyassi. Pilandsberg illustrates a peculiar lunar form in which concentric cones of cylinder shape are separated by fissures that have emitted various kinds of feldspathoid lavas. The Vredepoort Mountain on the Vaal River is a "cylinder up" thrust into the Witwatersrand beds, closely paralleling the lunar structure called Wargentín. In Africa, the Tertiary upheavals consisted of faults rather than folds, and features like the Rift Valley still stand out clearly despite the results of weathering. The Rift Valley practically duplicates the Alpine Cleft of the moon, and the fault scarps visible in the crater rings of the moon are so sharply defined that Schwartz believes they cannot be older than the Tertiary. Although atmospheric weathering may be excluded as an agency tending to erase the moon's relief, yet the rocks on its surface are subjected to intense strains, sufficient to produce disruption, from the alternate exposure to the sun's rays and to the cold of outer space.

ISOSTASY. The full acceptance of the theory of isostasy by geologists has been retarded by its apparent failure to account for the evidences of crustal shortening and collapse supplied by folded mountain ranges. The adjustments of strata involved in the maintenance of isostatic equilibrium between an area of crustal loading and an area of relief are generally conceived to be of vertical type and do not seem to call for any extensive horizontal component. Yet the geological data obtained by actual studies of mountain folds seem to imply great horizontal compression and shortening. C. O. Swenson considered that the magnitude of these horizontal forces cannot be explained adequately by expansion of the segment under relief from erosion in accordance with the isostatic principle of Bowie. There would appear to be some other process at work in the deformation. R. T. Chamberlin, also, remarked that on the isostatic theory the surface relief of the earth should steadily have diminished with progress of time. The mechanism of adjustment must work toward eventual equilibrium and a crust of uniform density. Lawson has developed the idea of elastic rebound to account for the overlap and folding of the rocks in the northern Rockies, as noted in the YEAR BOOK for 1927.

LABORATORY STUDY OF FOLDING. In an experimental research, Link called attention to some results in the production of arcuate and en échelon folds that may have significance in regard to the origin of these structures in mountainous regions. Various artificial preparations supposed to resemble different kinds of rocks in their response to compression were employed in the experiments. These are directed so as to show the effects of applying pressure differentially in the horizontal plane upon essentially homogeneous materials and again of applying uniform pressure against materials of variable rigidity or competency. Both methods produce results closely resembling natural mountain folds. By applying differential stresses upon incompetent materials an arcuate system of en échelon folds is developed in direction normal to the stress axes, with a general pattern in some

instances that suggests the form of Appalachian folding with its sinuous trend. The salient parts of the system appear to represent loci of greater compression and the recessed parts of smaller deformation. Variation of the materials used to represent sediments also leads to the formation of en échelon folds even without differences in the pressures exerted. A competent clay layer in the shape of an arc set against less rigid material develops an arcuate pattern comparable to the Jura Mountains, for which the origin may be explained by the rigid delta conglomerate (Nagelfüh) placed between the Alps and the Juras. The latter have arisen in response to pressures exerted upon weaker beds transmitted through the strong conglomerate.

MAGMATIC DIFFERENTIATION. Slow cooling and the agency of volatile compounds or mineralizers are the chief factors in the formation of the alkaline igneous rocks, according to C. H. Smyth, Jr., who accepts Daly's view that the alkaline and sub-alkaline rocks spring from a common parent magma of basaltic composition. The assimilation of limestone in the magma seems to be an unnecessary condition. Long-continued undisturbed cooling is most important, for thereby the mineralizers become more and more concentrated into the residual magma which holds the alkaline fraction until consolidation of the whole takes place. Rapid chill and crystallization of the primary magma, on the other hand, produces basic rocks of the basaltic and allied types. Because of its fluidity and low density, the alkaline fraction tends to collect in the top of the magma reservoir and thence works its way upward toward the surface. The alkaline rocks characterize regions of crustal stability like eastern North America and northern Europe, whereas folds and faults, where extensive and deep-seated, interfere with differentiation so that such regions as the Cordilleras and Pacific coast of North America contain mostly rocks of the sub-alkaline and basic groups.

CORAL REEFS. In its preliminary report the committee of Australian scientists who have been engaged in the study of the Great Barrier Reef summarizes some of the general features that have been brought to light thus far. The reef structure is a development chiefly of post-Glacial time. The continental shelf on which it rests came into existence by subsidence and on the submerged areas the coral organisms began to grow upward and outward. During the Glacial age a lowering of the sea-level took place by withdrawal of the waters in forming ice, and the lowered ocean produced plunging cliffs around some of the islands, such as the eastern members of the Cumberland and Northumberland groups and the Keppel Islands. There is no evidence, however, to show that the major reef zone is built on a rock shelf abraded around the continental margin by the lowered ocean. The fluctuations of sea-level in Glacial time are regarded more as complicating incidents than of controlling importance in the evolution of the reefs. The progress of the corals upward has not been counterbalanced by subsidence *pari passu* of the platform, as is inferred by some previous investigators and implied in the Darwinian theory of reef formation.

GLACIERS. By means of suitable instruments set in the solid ice of glaciers, R. T. Chamberlin observed that movement is not continuous

like a viscous liquid but takes place by a series of jumps indicative of recurrent stresses followed by sudden relief. Inasmuch as the capacity for storing up stresses is the property of an elastic solid, it follows that the material of glaciers is so organized as to have the rigidity somewhat of a rock although not to the same extent. Four general types of movement are evident in a glacier. The most important, measured by its results for the whole mass, is an idiomolecular exchange between granules of the ice, the individual granules rotating and changing position to accommodate themselves to the stress. Parallel structure and foliation in the ice arise from a second type, the solid stressing of aggregates of granules and movement along planes. A third type consists of intermittent slips along thrust planes, involving larger masses than the preceding. The fourth is represented by the sliding of the glacier *en masse* on its rock bed.

ABUNDANCE OF THE SIBERIAN MAMMOTH. In the two hundred and fifty years of Russian settlement, Siberia has yielded at least 50,000 mammoth skeletons, and the general average of 200 animals a year was maintained at the present time, according to I. P. Tolmachoff. There are 37 recorded discoveries of soft parts of the mammoth, besides two of the rhinoceros. The climate when these animals flourished could not have been much different than that of the present; if it had been warmer the flesh and ivory would not have been so well preserved. The animals seem to have been well adapted to their surroundings, as indicated by their wide distribution and the excellent physical condition of the specimens which have been preserved whole or nearly so. Their extinction can hardly be laid to changes of environment or defects of organization or extermination by man. Tolmachoff explains it as the result of extreme specialization, with a gradual racial decline. He states that the stores of fossil ivory will probably serve industrial needs long after elephant ivory has disappeared from trade.

MINERAL DEPOSITS. THE YEAR BOOK for 1927 made note of the remarkable progress recently shown in the adaptation and use of geophysical methods of prospecting. The development of a new field of applied geology seems to be in prospect, in fact the use of these methods has already attained a prominent place in the technique of locating and defining structures favorable to the occurrence of oil, as also of detecting the presence of hidden bodies of ores. Descriptions of the instruments and methods employed are given in numerous current publications of the technical press, particularly in the papers of the American Institute of Mining and Metallurgical Engineers contributed to the New York and Boston meetings of the society in 1928.

The subject can only be touched on in this place and it suffices to state that the methods applicable are divisible into four groups in accordance with the physical principles involved. These are (1) magnetic, (2) electrical, (3) gravitational, (4) seismic. The magnetic method, which makes use of the magnetic anomalies occurring in vicinity of certain kinds of ores, has been employed for some time, but the others are essentially new. The seismic and gravitational methods seem to be particularly adapted to tracing the variations of structure in the sedimentary rocks, and accordingly are being extensively adopted by oil companies for explora-

tion in fields where the surface conditions afford little clew to the stratigraphic arrangement in depth. It is not to be understood that the new technique is a complete substitute for geological field study, rather it is an adjunct to such study which is required both to select areas suitable for exploration and to interpret its results.

I. W. Jones brought under critical review the use of carbon ratios in coals, that is, the proportions of fixed to volatile carbon, as an indicator of the distribution of oil and gas deposits. In western Canada, coals occur with carbon ratios of 55 or 60 per cent, approximately the same as shown by the eastern Appalachian carboniferous coals, although the latter have undergone much greater dynamic metamorphism. The carbon ratios do not accord with the ranks of coal in that region, and it is likely that the variations in fixed carbon content may arise in part from original differences in composition of the coal-forming plants. Consequently, high fixed carbon does not necessarily imply the absence of oil and gas accumulations.

GEOPHYSICS. See GEOLOGY.

GEORGETOWN UNIVERSITY. A Roman Catholic institution of higher education for men, at Washington, D. C., founded in 1789. In the autumn of 1928 there were 2509 students enrolled, with a distribution as follows: Arts and sciences, 981; medical, 468; dental, 124; law, 461; and foreign service, 475. The faculty numbered about 350. The Riggs Memorial Library contained 162,476 volumes; the Hirst Library, 9,123; and individual libraries maintained by the professional schools, many additional volumes. During the year numerous improvements were made on the campus. President, the Rev. W. Coleman Nevils, S.J., Ph.D., D.D.

GEORGE WASHINGTON UNIVERSITY. A coeducational institution of higher learning in Washington, D. C., founded in 1821. The enrollment for the first term of the year 1928-29 was 5308, divided as follows: Columbian College, 2600; graduate school of letters and sciences, 335; school of medicine, 290; law school, 686; school of engineering, 402; school of pharmacy, 59; school of education, 673; school of government, 72; division of library science, 101; division of fine arts, 90. The summer session for 1928 had a total enrollment of 1416. The faculty numbered 346. The endowment fund amounted to \$1,081,546, from which the income for the year was \$42,417. The total income from all sources was \$921,367. The total number of volumes in the University library, including the law and medical libraries, was 80,000. In the autumn of 1928 the school of government was opened, offering a general course in government and a foreign service course. President, Cloyd Heck Marvin, Ph.D., LL.D.

GEORGIA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,895,832. The estimated population on July 1, 1928, was 3,203,000. The capital is Atlanta.

AGRICULTURE. The table in the next column gives the acreage, production, and value of the principal crops in 1927 and 1928.

MINERAL PRODUCTION. Clay products, stone, and raw clay again made up the great bulk of the yearly mineral production. Coal, while still produced, was on a minor and decreasing scale. There was considerable output, on the other

Crop	Year	Acreage	Prod. bu.	Value
Cotton	1928	3,719,000	1,020,000*	\$92,820,000
	1927	3,413,000	1,100,000*	106,700,000
Corn	1928	3,620,000	38,010,000	39,910,000
	1927	3,393,000	54,502,000	44,147,000
Tobacco	1928	122,300	84,387,000	11,175,000
	1927	81,500	59,088,000	11,440,000
Hay	1928	811,000	521,000*	8,077,000
	1927	825,000	582,000*	9,481,000
Peanuts	1928	350,000	189,000,000	8,316,000
	1927	304,000	220,400,000	8,596,000
Oats	1928	265,000	5,800,000	4,505,000
	1927	442,000	9,282,000	6,962,000
Potatoes	1928	22,000	1,682,000	1,934,000
	1927	17,000	1,804,000	2,152,000
Sweet potatoes	1928	119,000	10,234,000	8,699,000
	1927	132,000	10,560,000	7,920,000
Peaches	1928	.....	10,000,000	8,100,000
	1927	.....	5,943,000	8,023,000
Wheat	1928	94,000	1,034,000	1,727,000
	1927	125,000	1,150,000	1,782,000

* bales, * pounds, * tons.

hand, in 1926, among a list of lesser products which included baryte (total for 1926, \$532,706), bauxite (108,650), fuller's earth (of which Georgia was the leading producer), lime, mica, talc, manganese, and manganese ores. The total of clay products was \$5,957,486 for 1926; for 1925, \$6,369,227. Stone rose to a production of \$5,470,561 for 1926, as against \$4,971,493 for 1925; in quantity, 820,570 short tons for 1926; for 1925, 734,140. There were slight yields of gold and silver. The total value of the State's mineral products was \$17,479,967 for 1926; for 1925, \$16,503,741.

FINANCE. State expenditures in the year end-December 31, 1927, as reported by the United States Department of Commerce, were: for maintenance and operation of governmental departments, \$19,859,437 (of which \$8,191,503 was aid to local education); for interest on debt, \$308,832; for conducting public service enterprises, \$6321; for permanent improvements, \$13,255,537; total, 33,430,127 (of which \$15,138,307 was for highways, \$2,365,501 being for maintenance and \$12,772,806 for construction). Revenues were \$29,262,206. Of this the property and special taxes provided 24.3 per cent; departmental earnings and charges for officials' services, 8.1 per cent; sales of licenses and a tax on gasoline, 42.0 per cent. Property valuation was \$1,275,197,929; State taxation thereon, \$6,375,990. Net State debt was \$9,249,316 on December 31, 1927.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 6835.40. There were built in 1928, 5.24 miles of additional second track.

EDUCATION. The operation of the \$1,000,000 State equalization fund was reported by a writer in the *Journal of the National Education Association* as having begun to show results in the direction of increased efficiency in the working of the rural schools. There were enrolled in the public schools in the academic year 1926-27, 692,907 pupils. Of these, 614,386 were in elementary schools and 73,999 in high schools. Salaries of teachers averaged: white, \$758.13; Negro, \$289.84; all teachers, \$648.46.

CHARITIES AND CORRECTIONS. The chief of the State charitable and correctional institutions operating in 1928 were the State Training School for Boys, Confederate Soldiers' Home, State Sanitarium, Training School for Mental Defectives, Academy for the Blind, and School for the Deaf. The State Sanitarium (mental) had 4936 patients as inmates on Jan. 1, 1928. There had

been admitted in the year previous, 965. The Training School for Mental Defectives had 91 inmates on January 1, and had admitted 29 in the year preceding.

POLITICAL AND OTHER EVENTS. Chairman Holder, of the State highway department, stated in July that the highway board had either completed or had under construction four paved highways reaching from border to border of the State. The Coastal Highway, extending from Savannah to the St. Mary's River, was opened July 11. The road running to the Alabama line at West Point was likewise completed in the early part of the year. The suicide of a postmaster at Douglas, involved in money difficulties, and a declaration left by him to the effect that he had been driven to the wall by contributions levied upon him by persons connected with the Republican State organization, led to the institution of a Federal Senate inquiry into the subject of levies exacted by political party organizations in the South in return for grants of Federal patronage (See UNITED STATES, *Congress*). A peach standardization law of the State went into effect, placing in a select class all peaches of two inches or more in diameter.

The State Tax Commissioner, in a document of April 30, urged the enactment of a State personal income-tax law modeled on that of Virginia, as the basis of State revenue. It was announced in May that Italian interests had undertaken the establishment of a rayon plant to cost ultimately about \$10,000,000, at Rome, Ga. Floods in southern Georgia drove several thousand inhabitants from their homes late in April. The relief statue of Lee on Stone Mountain was unveiled April 9. Experiment in the commercial growth of bamboo was made near Savannah.

At Atlanta, work was begun on the foundations of a new city hall, at Washington and Mitchell streets, to cost about \$1,278,000. The construction of a number of viaducts to eliminate grade crossings within the city was carried on. The Nashville, Chattanooga & St. Louis Railroad negotiated with the State public service commission on the demand that the railroad build a new passenger station in the city. The city council on May 7 passed an ordinance to withdraw from the city bond commission the power to veto bond issues. Proposal of a referendum on abandoning the city's system of junior high schools was vetoed April 4 by Mayor Ragsdale.

ELECTION. In the election of November 6 the voters of the State gave a majority, substantial although much below normal, for the Democratic Presidential candidate, Gov. Smith. The vote was: Smith, 129,602; Hoover, Republican, 99,369. The Republican popular vote was more than treble that cast for Coolidge in 1924, but the total Democratic vote of the State was also, though by comparison slightly, increased. In Georgia as in other normally Democratic States, there was waged an organized opposition to Governor Smith within the membership of his own party, on personal grounds and particularly on the avowed score of his stand on Prohibition. The effect of religious antagonism was also asserted, although less measurable. Against efforts to induce voters to knife Governor Smith was invoked Rule Two of the State Democratic organization, as implying in those who had voted in

the party primaries a pledge of obligation to support the party nominees in the general election. Governor L. G. Hardman, Democrat, was reelected. All twelve of the State's delegation in the United States House of Representatives were reelected; all were Democrats.

OFFICERS. Governor, L. G. Hardman; Secretary of State, Geo. H. Carswell; Attorney-General, George M. Napier; Treasurer, W. J. Speer; Auditor, S. J. State; Comptroller-General, W. A. Wright; Superintendent of Education, M. L. Duggan (appointed to fill unexpired term of Fort E. Land, deceased); Commissioner of Agriculture, Eugene Talmadge; Commissioner of Commerce and Labor, H. M. Stanley.

JUDICIARY. Supreme Court: Chief Justice, Richard B. Russell; Associate Justices, Marcus W. Beck, Samuel C. Atkinson, H. Warner Hill, S. Price Gilbert, James K. Hines.

GEORGIA (GEORGIAN SOCIALIST SOVIET REPUBLIC). One of the three Transcaucasian republics that emerged after the Russian Revolution of 1917. After 1918 it was an independent republic; since 1921 it has been known as the Georgian Socialist Soviet Republic, and with Armenia and Azerbaijan, forms the Transcaucasian Federal Republic which is affiliated with the Union of Soviet Socialist Republics (see RUSSIA). Georgia is situated in Transcaucasia between the Black and Caspian seas and is bounded on the north by the Caucasus, on the east by the Republic of Azerbaijan, and on the south and southwest by Armenia and Turkish territory. Capital, Tiflis. Area, 39,000 square miles; population, according to the census of 1926, 2,660,963. The chief cities with their populations are Tiflis, 283,000; Kutais, 85,151; Sukhum, 61,974; and Poti, 20,741. At the end of 1925 there were 211,210 pupils attending the public schools, including 1600 students in the higher educational institutions.

The chief pursuit is agriculture, which engages about 90 per cent of the people. The methods are very primitive. The large estates have been divided among the peasants, the minimum allowance for any one family being about 17 acres. Corn, vine growing, and the raising of fruits are the principal agricultural pursuits. Silk production and beekeeping are long-established activities. The chief mineral production is that of manganese, around Tchiaturi, where the greatest deposits of this mineral in the world are found. The industry was virtually ruined during the World War, but is gradually resuming its pre-war production. Other mineral deposits are coal, naphtha, copper ore, lead, and iron ore. All the basic industries were nationalized by the Soviet Government. The railways, which are all state owned, total 570 miles.

GEORGIA SCHOOL OF TECHNOLOGY. A State institution of higher education at Atlanta, Ga.; founded in 1888. For the autumn of 1928 the total number of collegiate day students was 2144. The registration for the summer school of the year was 544, and the number of members of the faculty in the autumn of 1928 was 157. The endowment of the institution amounted to \$200,000, and the income from the appropriations and fees was \$553,000. The library contained 23,000 volumes. President, Marion Luther Brittain, LL.D.

GEORGIA, UNIVERSITY OF. A State institution of higher education for men and women at Athens, Ga.; chartered in 1785 and opened in

1801. In the autumn of 1928 there were 1738 enrolled, and there was an attendance of 2667 students in the summer session. The faculty for 1928-29 numbered 102 members. The productive funds of the University amounted to \$425,000, and the income for the year from the State and other sources was \$400,000. The library contained 63,000 volumes. During the year a commerce and journalism building was completed at a cost of \$215,000. President, Charles M. Snelling, Sc.D.

GERMAN COLONIES. During the World War all the overseas possessions of Germany in Africa, the Pacific Ocean, and the Far East were captured by the Allies. In Africa they included German East Africa, German Southwest Africa, Kamerun, and Togo. All of these were divided between Great Britain and France, Southwest Africa being annexed to the Union of South Africa. In the Pacific were New Guinea, including Kaiser Wilhelmsland, Bismarck Archipelago, German Solomon Islands, Nauru, Caroline Islands, Marshall Islands, Marianne or Ladronne Islands (with the exception of Guam), and German Samoa. In the Far East there was only the German possession of Kiaochow. The total area of the German colonies was estimated at 1,140,117 square miles and the total population was estimated at 13,258,000. See principal titles mentioned above, also TANGANYIKA TERRITORY, and KENYA COLONY.

GERMAN EVANGELICAL SYNOD OF NORTH AMERICA. See EVANGELICAL SYNOD OF NORTH AMERICA.

GERMANIC LANGUAGE AND LITERATURE. See PHILOLOGY, MODERN.

GERMAN LITERATURE. There were some indications in the German book-world of 1928 that the chaotic state of literary production since the War was yielding to a saner outlook upon life and an acceptance of the great change in the economic and social conditions of the people in the German Republic. Writers of the older generation had reappeared on the book market and their works did not show a perceptible decline of their creative faculties. Fiction dominated, as it has always done. Drama was not represented by any outstanding work, and poetry seemed to be less favored than before; but biography and literary studies were presented by a great number of writers of varying merit.

FICTION. Among the authors of pre-war reputation Walter von Molo has written a very unusual book: *Die Legende vom Herrn*, a life of Christ in the form of fiction. Arthur Schnitzler's *Therese* limns the character of the heroine and tells her pathetic story in the author's usual pessimistic vein. Max Dreyer seems definitely to have deserted drama; his latest book is the novel *Das Himmelbett von Hilgenloh*. Wilhelm Schmidthohn's *Mein Freund Dei* is a charming story of an interrupted tour of the world. Wilhelm Hegeler has woven a story about Goya: *Goya und die Bucklige*. Wilhelm Wiegand's *Fahrt zur Liebsinsel*, Karl Hans Strobl's *Zwei Saltzenbrod*, Arthur Brausewetter's *Halbseele*, Franz Adam Beyerlein's story of East Prussia, *Der Brückenkopf*, Alfred Brust's *Jutt und Jule*, Stefan Grossmann's *Chefredakteur Roth führt Krieg*, Willy Seidel's *Der neue Daniel*, and Korfiz Holm's *Herr ist Trumpf* maintain the old standard of their work. Jacob

Wassermann, who seems to have won a certain following among American readers, has published *Der Fall Maurizius*.

A striking individuality among German women writers, Helene Böhlau has returned to the milieu which first made her famous, old Weimar, in *Die kleine Goethemutter*. Short stories have come from Isolde Kurz whose *Stunde des Unsichtbaren* touches the realm of occultism, Rainer Maria Rilke: *Erzählungen und Skizzen aus der Frühzeit*, Irene Forbes-Mosse: *Don Juan's Töchter*, Herbert Eulenburg: *Casanova's letzte Abenteuer*, Jacob Schaffner: *Föhnwind*, suggesting his native Switzerland, Hermann Stehr: *Abendrot* and others. Among the writers who have come into prominence since the War, perhaps none is better known than Franz Werfel, whose *Abiturientag* deals with the problems of the adolescent now so much favored in fiction and drama. Another book of that kind is Hans Carossa's *Vervandlungen einer Jugend*. Even so popular a novelist as Rudolf Stratz deals with these problems in *Der Unbekannte*. A constructive contribution to this literature of adolescence is Willy Speyer's *Der Kampf der Tertia* which pictures an ideal boys' school.

As a master work of modern thought in the old form of fiction has been hailed Bruno Frank's *Politische Novelle*. Hermann Unger's *Die Klasse* tells the tragedy of a teacher's life. A charming story of childhood is Eduard Reinacher's *In den Kinderschuhen*. Felix Riemkasten's *Alle Tage Gloria* is a delightful record of a child's first three years by a happy father. Wilhelm Vershofen's *Svennenbrügge* is a book of tales of the northern heath; Georg Edward's *Passatwind*, of the West Indies. Annette Kolb, a writer of Franco-German descent is the author of the novel *Daphne Herbst*. Hans Friedrich Blunck's *Gewalt über das Feuer* is "a myth of God and man." Oscar Maria Fontana, a Viennese of Dalmatian descent, cultivates the south-Slavic material with such success that the city of Vienna awarded him a prize for his novel *Gefangene der Erde*. Wolfgang C. Ludwig Stein has written a delightfully humorous work in the form of a diary, with the curious title, *Des Freiherrn Knote von Knöteringshausen Europäischer Karneval oder der Typhonische Stern*. A posthumous book by Hermann Sudermann, *Purzelchen*, a tale of youth, reflects the genial humor of his age. Arnold Zweig's *Pont und Anna*, although full of possibilities, fails of attaining the power of his *Sergeant Grischa* by a deplorable tendency to play with style.

The holiday season brought a number of new works by older authors like Ernst Zahn, whose *Tochter Dodais* is a song of the woman's soul, ardent, yet reverent in spirit; Jakob Schaffner: *Der Mensch Krone*, Georg von Ompeda, whose *Sonntagskind* is a charming autobiographical story of his youth, Heinrich Mann, whose *Du-genie oder die Kriegszeit* is a story of the 1870 period, and Fedor von Zobeltitz, whose novel *Der Mann im feurigen Ofen* does not show any decline in the septuagenarian author. Among the younger men, Hanns Johst published a volume of retrospective *Bekenntnisse*, Otto Flake outlined in *Freund aller Welt* the leading type of a new public conscience, and Hans Franck in his stories, *Recht ist Unrecht*, struck the familiar analytical note. Gerhart Hauptmann's latest novel, *Wanda* is conceived in the spirit of al-

truism which distinguishes many of his works, but is hardly of wide appeal.

DRAMA. Since the time of Grillparzer, who inspired by Calderon wrote his *Der Traum ein Leben*, sixteenth and seventeenth century Spanish drama has attracted the attention of German dramatists. Hugo von Hofmannsthal's *Der Turm* is directly based upon Calderon's *La vida es sueno*, but injected into the theme his modern destructive psychology. Another poet, Alfred Wolfenstein in his *Celestina*, has gone back to the tragi-comedy, *De Rojas Celestina*, by the sixteenth century playwright, Calisto y Melibán. F. Walther Ilger's *Gräfin Dubarry* is a tragi-comedy suggesting the dawn of the coming revolution in a picture of the dying rococo. Edwin Guido Kolbenheyer's *Heroische Leidenschaften* presents the tragedy of Giordano Bruno. Ernst Lissauer has gone into an even remoter past in his play *Das Weib des Jephtha*. Gerhard Menzel's *Toboggan* is a *danse macabre* in nine scenes, being the story of a man supposed to be dead and unable to find his way back to the world of the living. Eugen Ortner's *Meyer Helmbrecht* is the tragedy of a peasant boy who sets out to become a knight. Hermann Bahr has published a "dramatic dialogue," *Himmel auf Erden*. Lion Feuchtwanger, who is known in America through translations of his fiction, has written three plays on Anglo-Saxon themes: *Angelsächsische Stücke*. Walter Bähr's one-act plays *Dreikland der Liebe* are, like most of the works of the younger men, products of a cool, analytical mind and lack the warmth of real blood. Ernst Lissauer, so far known only as a poet, essayist, and writer on music, has written a Biblical drama, *Das Weib des Jephtha*, which was very favorably received.

The latest premières of the year were Hermann Ungar's *Der rote General*, a play in which a modern theme was treated in the most approved old manner, and Ernst Fischer's *Lenin*, a drama curious through its dualism, being at once a tragedy and the song of songs of revolution.

POETRY. Anton Wildgans has for some years been rising to fame. His *Kirbisch, oder der Gendarm, die Schande, und das Glück* is in spite of its awkward title a strong work. Hans Heinrich Ehrler's sensitive personality is evident from his poems *Gesicht und Antlitz*. Paul Wertheimer's *Der Triumph des Eros* made Ernst Lissauer remark that it dealt more with "sexus" than "Eros." E. Kurt Fischer's *Masuren* conveys the atmosphere of its East Prussian milieu. Ruth Schaumann, poet-artist, has published two books, *Der Rebenhag* and *Die Rose*. Rudolf Borchardt's *Die Schöpfung der Liebe* is a book of love lyrics of a finer character than most verse of its kind. Readers who had known Max Dauthendey since his first appearance in the nineties welcomed his *Ausgewählte Lie der aus neun Büchern*. Isolde Kurz, the gifted poet and novelist, has published *Der Ruf des Pan*, two poems of life and death. The collected works of Christian Wagner, a poet who rose from the ranks of the people, and two new books by Frieda Schanz sounded echoes of the poetry of the early nineties.

BIOGRAPHY. The Tolstoy centenary brought forth several works of merit, among them René Fülöp-Miller's *Der unbekannte Tolstoy*, officially sanctioned by the family, which contains three hundred pages by Tolstoy himself, fragments of an unfinished novel, some short stories and other works. Philip Witkop's *Tolstoy* is a simple record

of his life and works with many illustrations. Paul Birukoff's *Vater und Tochter* presents the correspondence between Tolstoy and his daughter Marie. Emil Ludwig's much disputed book on Christ, *Der Menschensohn*, is known in America through a translation. Friedrich Gundolf's *Paracelsus* presents the supposed prototype of Goethe's *Faust* as "the most original and perhaps most powerful German soul of the Reformation." Franz Strunz has written a record of the life and work of Wiclif's Bohemian disciple: *Jan Huss*. Friedrich von Oppeln-Bronikowski's *David Ferdinand Korff* traces the influence of this poet and magnetist upon the romantic movement. Hans von Müller's book on *E. T. A. Hoffmann und Jean Paul*, dealing with the same period, shows the mutual relation of these men and that to the women of their circle, among them the poet, Wilhelmina von Chezy. Erwin Rieger pays deserved tribute to the life and work of *Stefan Zweig*. Heinrich Spiero has written a life of the poet *Gustav Falke*.

A posthumous book by Carl Hauptmann deals with his friendships: *Leben mit Freunden*. Arthur Holitscher's autobiographical *Mein Leben in dieser Zeit* is called the life story of a rebel. Rudolf Presber's *Aus der Jugendzeit* is another autobiography. Walter Ziersch, in a book on *Ludwig Thomas*, calls the pathetic story of his marriage the tragedy of a pine and a palm trying to live in the same soil. Eugen Bagger's *Franz Josef* is a study of the last Austrian emperor's personality. Among the books on Eleonora Duse that have recently been published, E. A. Reinhardt's *Das Leben der Eleonora Duse* is distinguished for his interpretation of her racial personality. Elga Kern has published the first volume of a history of the women who have fought for the rights of her sex: *Führende Frauen Europas*. Herbert Schiller has edited a second volume of the *Briefe an Cotta*. Karl Bahn's *Marianne Willemer* is a contribution to Goethe biography.

HISTORY. An important work is Jacob Burckhardt's *Kultur der Renaissance in Italien*. Interesting is Wolfgang Stammler's *Vonder Mystik zum Barock* which attempts to give a historical survey of the dissolution, fermentation, and beginning clarification of ideas from 1400 to 1600. Franz Pagel has written a pictorial history of Germany: *Deutsche Geschichte in Bildern*. Karl Theodor Strasser writes on *Wikinger und Normannen*.

LITERATURE. Paul Weiglin's *Die dramatische Kunst und Literatur in Deutschland* covers German drama from mediæval plays to the present. Julius Bab's *Das Theater der Gegenwart* reviews the German stage since 1870. Rudolf Tyrolt's *Theater und Schauspieler* is based on the author's close connection with stars of the German stage. Emil Ermatinger's *Krisen und Probleme der neuen deutschen Dichtung* is valuable. Erich Mühsam offers a collection of his critical writings: *Sammlung 1898-1928*. Lou Andreas Salome has written an appreciation of *Rainer Maria Rilke*, Wilhelm Bohn, of *Hölderlin*, Hans Sittenberger, of *Schubert*, Rudolf Gottschalk, of *Spitteler*, Heinrich Schmitt's *Erneuerung des Epos* is a philosophical study of Spitteler's *Olympischer Frühling*. Heinrich Straumann's *Justinus Kerner und der Okkultismus in der deutschen Romantik* is interesting. Curt Sigmund Gutkind's *Frauenbriefe aus der italienischen Renaissance* are of more historical than literary value. Alfred Stern

has written *Der Einfluss der französischen Revolution auf das deutsche Geistesleben*.

PHILOSOPHY, RELIGION, ETC. Friedrich Adolf Voigt has written *Sören Kierkegaard im Kampfe mit der Romantik, der Theologie und der Kirche*, and August Vetter in *Frömmigkeit als Leidenschaft* offers an interpretation of Kierkegaard. Hans Günther's *Jung Stilling* is a contribution to the psychology of German fiction. Franz Spunda's *Griechische Mönche* is a study of Greek Catholicism. Books on Plato were written by Paul Friedländer: *Platon*, and Julius Stengel: *Platon als Erzieher*. Bruno Dressler's *Geschichte der englischen Erziehung* is the first attempt at a history of English pedagogy. Erwin Rieger has compiled a book of selections from Blaise Pascal. Arnold Zweig's *Juden auf der deutschen Bühne* reviews the work of Otto Brahm, Max Reinhardt, and others. Alfred Götz's *Frau von Staël in Deutschland 1803* is a selection of her letters supplementing her book, *L'Allemagne*. The novelist, Georg Herrmann, offers reflections on life and the world in *Die Zeitlupe*; Walter Bloem philosophizes in *Weltgeschichte: ein Buch von heutiger und kommender Menschheit*. An interesting study is Rudolf Kassner's *Narziss oder Mythos und Einbildungskraft*. Hermann Oncken has written on *Politik Kriegsführung*. Ernst Jackh's *Deutschland das Herz Europas* deals with the national foundations of international politics. Alexander von Gleichen-Russwurm in *Die Lust der Welt* reviews the beautiful women of history from Lais of Corinth to the Dame aux Camelias. Martin Buber's *Die chassidischen Bücher* is a key to the understanding of Hebrew philosophy. P. Köhler's *Von der Nibelungen versunkenem Hort* and Hermann Schneider's *Germanische Heldensagen* are contributions to German folklore. Felix Günther's *Schubert's Lied* is an æsthetic study. A few books of travel deserve mention: Ph. C. Visser's *Zwischen Karakorum und Hindukusch*, Bernhard Kellermann's *Auf Persiens Karavananstrasse*, and Schröder-Viborg's book on *Süd-Amerika*. Translations are innumerable.

NECROLOGY. Among the notable German men of letters dying during the year and discussed under their own heads or in the NECROLOGY are; Erich Schlaikjer, actor, dramatist, essayist, died February 11; Hans von Gumppenberg, poet, dramatist, editor, died March 29; Hans Barth, poet and novelist, died March 15; Carl Bleibtreu, poet, novelist, dramatist, and essayist, died January 30; Heinrich Federer, poet and essayist, died April 29; Christian Schmitt, Alsatian poet, died April 28; Arthur Seidl, music critic, died April 13; Ida Boy-Ed, novelist, died May 13; Victor Auburtin, novelist, died June 29; Hermann Sudermann, dramatist and novelist, died November 31. Willie Bruno, the most gifted representative of the nature-cult and philosophy which found in Wilhelm Bölsche a more scientific protagonist, died September 14. His verse and his fiction occupy a place of their own in modern German literature, and he will also be remembered for his active share in the foundation of the *Freie Volksbühne*, which inaugurated a new era in German drama. Heinrich Gassert, author of epics and lyrics, best known through his original college songs, died September 6. Marie Stritt, like Anita Augspurg, for some time an esteemed actress, before becoming an outstanding figure in the Suffrage movement of Germany, died September 18.

See PHILOLOGY, MODERN.

GERMAN NEW GUINEA. This name was applied to all the German territories in the western Pacific (see GERMAN COLONIES). They were distributed by the Treaty of Versailles as follows: Those north of the Equator, viz., the Caroline, Marshall, Palau, and Ladrone Islands, to Japan, under mandate; those south of the Equator, viz., the Bismarck Archipelago, the German Solomon Islands, and former German possessions on the Island of New Guinea, to Australia, under mandate of the League of Nations. All German possessions grouped under the name of German New Guinea were formerly administered from Rabaul, the capital, in the north-eastern part of New Guinea.

GERMANY. A federal republic of Central Europe, constituted after the abdication of Emperor William II on Nov. 9, 1918; and organized under the constitution of July 31, 1919, by the National Assembly at Weimar, elected in January of that year; formerly the German Empire; bounded on the north by the Baltic Sea, Denmark, and the North Sea; on the west by the North Sea, the Netherlands, Belgium, Luxembourg, and France; on the east by Austria, Czechoslovakia, and Poland; and on the south by Switzerland, Austria, and Czechoslovakia. The German Empire consisted of 25 Federal States and the Imperial Reichsland; the Federal Republic consists of 18 republics. The capital is Berlin.

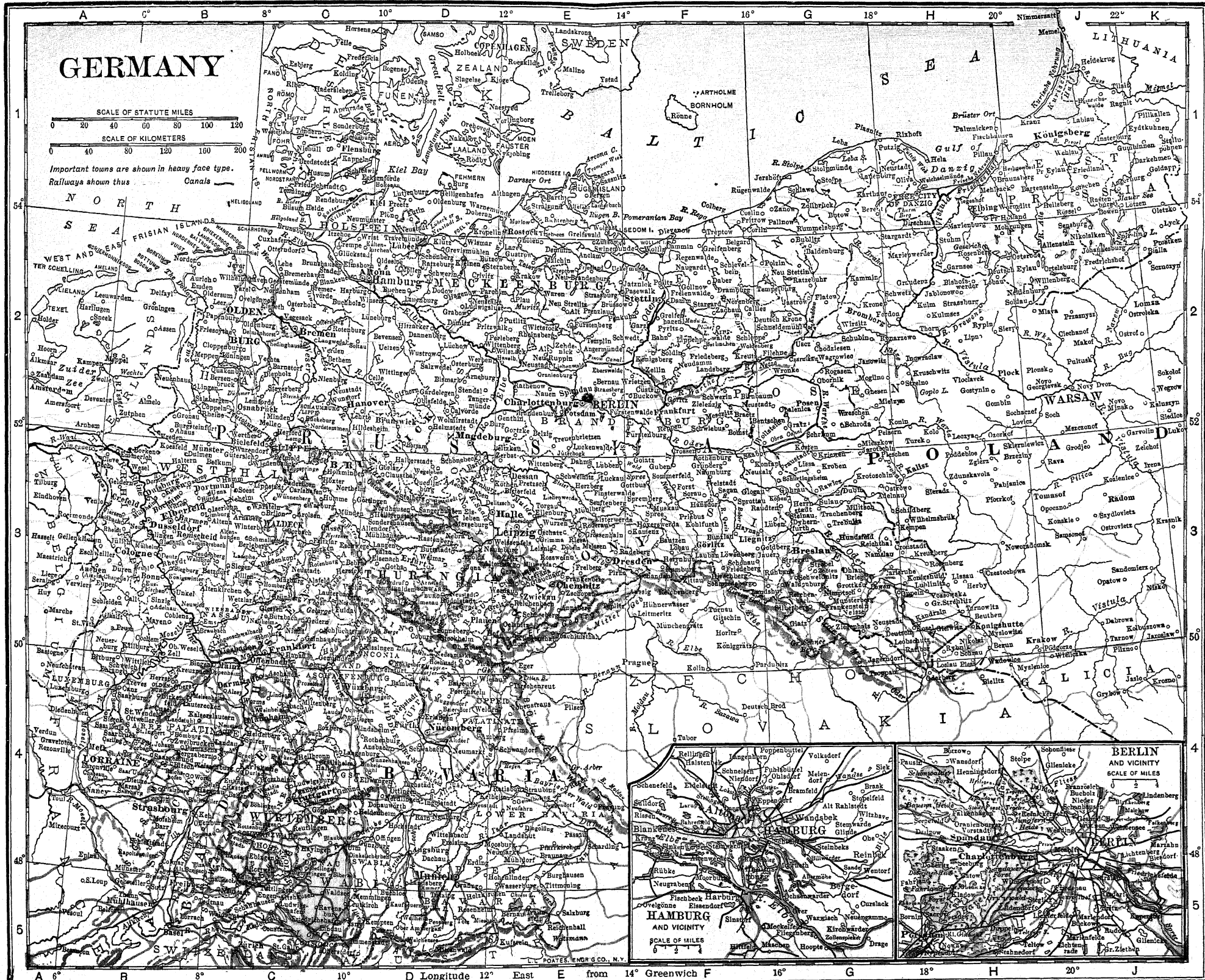
AREA AND POPULATION. At the census of Oct. 8, 1919, the area of the Republic, including the Saar Valley, was 182,213 square miles and the population, 59,852,682, of whom 28,496,419 were males and 31,356,263 females. The accompanying table from the *Statesman's Year Book* for 1928 gives area and population according to the census of June 16, 1925.

States of the Empire	Area English sq. miles	Population June 16, 1925	Pop. per sq. mile 1925
Prussia *	112,628	38,120,173	338
Bavaria *	29,343	7,379,594	251
Württemberg	7,532	2,580,285	342
Baden	5,819	2,312,462	397
Saxony	5,789	4,992,320	863
Mecklenburg-Schwerin	5,069	674,045	133
Thuringia	4,527	1,609,300	355
Hesse	2,970	1,347,279	454
Oldenburg	2,480	545,172	220
Brunswick	1,418	501,875	354
Mecklenburg-Strelitz	1,131	110,269	98
Anhalt	888	351,045	396
Lippe	469	163,643	349
Waldeck	408	55,816	137
Schaumburg-Lippe	131	48,046	367
Hamburg	160	1,152,523	7,203
Lübeck	115	127,971	1,113
Bremen	99	338,846	3,423
German Republic *	180,976	62,410,619	345
Prussian Saar District ^b	574	671,748	1,170
Saarpalz ^b	164	98,252	599
Saar District (altogether)	738	770,000	1,043
German Republic (with Saar District) ^b	181,714	63,180,619	347

* Excluding the Saar.

^b The figures for the population of the Saar District, in which the census of 1925 could not be taken, are estimates.

In 1926 the movement of population was: Births, 1,269,419; deaths, 775,878; marriages, 483,198; divorces, 35,451. In 1927, 60,789 German nationals emigrated from the country as compared with 65,280 in 1926. In 1925, 51,145 emigrated to the United States. The cities with more than 500,000 inhabitants at the census of 1925 were: Berlin (including suburbs), 4,024,-



165; Hamburg, 1,079,126; Cologne, 700,222; Munich, 680,704; Leipzig, 679,159; Dresden, 619,157; and Breslau, 557,139.

EDUCATION. Primary instruction is compulsory throughout Germany between the ages of six and 14. According to a school census taken in 1926-27 there were in that year 52,320 public elementary schools with 180,273 teachers (137,124 males and 43,149 females), and 6,629,779 pupils (3,340,804 boys and 3,288,975 girls). The latest figures for private schools of a similar nature were those for 1922 when there were 675 schools with 35,584 pupils (14,986 boys and 20,598 girls). The latest figures for secondary schools are also those of the school census of 1922 when there were for boys, 515 Gymnasias, with 10,051 teachers and 152,367 pupils; Real-gymnasias, 322, with 6678 teachers and 115,615 pupils; Ober-realschulen and Realschulen, 506, with 9404 teachers and 184,175 pupils; for girls, high schools, 824, with 14,852 teachers and 299,285 pupils. There are ten fully equipped technical schools, with the power of granting degrees. These had a teaching staff of 2274 and a student body of 21,683.

The universities, with the number of students in 1926, are as follows: Berlin, 8038; Bonn, 3510; Breslau, 2717; Cologne, 4748; Erlangen, 1330; Frankfurt, 2723; Freiburg, 3147; Gießen, 1327; Göttingen, 2580; Greifswald, 1055; Halle, 1770; Hamburg, 1969; Heidelberg, 2558; Jena, 1972; Kiel, 1820; Königsberg, 1666; Leipzig, 4639; Marburg, 2275; Munich, 6987; Münster, 2532; Rostock, 966; Tübingen, 2679; and Würzburg, 2013. The teaching staff in all of these universities numbered 7234. The 65,021 students were divided among the several faculties as follows: Theology, 3810; jurisprudence, 26,060; medicine and dentistry, 10,100; philosophy, 12,591; mathematics and natural science, 12,094; auxiliary science, 366.

PRODUCTION, INDUSTRIES, ETC. Almost all crops increased in 1927 as compared with the relatively low figures of 1926, yields per acre for most crops differing but little from the five-year period 1921-25. In June, 1927, there were 51,391,290 acres of arable land, 20,005,337 acres of grass, meadows, and pastures, and 201,585 acres of vineyards. The following table from the *Commerce Year Book* for 1928 shows the area and production of the principal crops in 1927:

Crop	Area *	Production ^b
		1927
Wheat	4,321	120,521
Rye	11,610	269,030
Barley	3,653	125,754
Oats	8,589	437,251
Spelt	308	5,070
Potatoes	6,918	1,379,707
Sugar beets	1,073	10,854 *
Fodder beets	1,747	24,389 *
Hay, alfalfa, and clover	18,781	35,407 *

* Thousands of acres; ^b thousands of units—bushels except as indicated; * unit, metric ton.

In 1927 the area devoted to vines was 181,872 acres and the wine yield 31,407,618 gallons; tobacco, 22,835 acres, 14,410,304 kilos in 1926. The sugar production in 1927-28 was 1,662,000 tons. On Dec. 31, 1927, there were 17,982,000 cattle, 22,880,000 swine, 4,080,000 sheep, 3,218,000 goats and 3,805,000 horses.

The 1927 production of minerals in Germany was considerably stimulated by the after effects of the British coal strike as well as by

the country's progressive industrial recovery. The impetus to production contrasted with a low level of output in the first half of 1926, thus accounting for an increase even over the figures for the year of the strike. The entire German pre-war production, of course, was considerably higher in some cases in the larger territory. The post-war territorial partitions chiefly affected the Alsace-Lorraine minette (iron ore) deposits, Pechelbronn petroleum and potash, and Upper Silesian zinc and lead deposits ceded to Poland after the Geneva decision in 1922. Production increases may be observed in the accompanying table, which compares the 1927 figures with those for 1926 and 1913 in the present area.

GERMAN PRODUCTION OF MINERALS

Item	1913 ^a	1926	1927
	Metric tons	Metric tons	Metric tons
Coal	140,753,200	145,295,700	153,599,400
Lignite	87,228,100	139,150,600	150,503,900
Iron ore	7,308,800	4,793,400	6,625,500
(Content)	2,353,200	1,544,500	2,124,100
Lead, silver, zinc ore	1,866,400	1,695,800	1,840,600
Zinc content	120,400	104,400	141,600
Lead content	61,400	53,900	57,600
Copper ore	947,800	932,800	950,400
(Content)	26,200	27,700	27,300
Arsenic ore	25,800	20,800	23,800
(Content)	1,900	1,800	1,500
Tin, cobalt, etc., ore	50,100	20,600	20,300
Sulphur pyrites	268,600	237,900	350,400
Sulphur content	95,400	98,900	149,500
Potash crude salts	11,607,300	9,408,100	11,071,500
K ₂ O content	1,188,600	1,088,700	1,268,800
Salts, for sale	1,348,500	1,965,800	2,263,800
Rock salt	569,800	479,500	534,000
Salinas (pan) salt	422,300	580,100	718,600
Brines (salt content)	71,400	95,400	96,900
Petroleum	12,100	14,300	17,800
Graphite, raw	99,100	61,000	117,800
Asphalt, rock			

^a Within present borders.

According to the industrial census of June 16, 1925, there were 1,842,913 industrial establishments in Germany, employing 12,482,442 working people, of whom 9,609,629 were males. The industries employing more than 1,000,000 workers were: Engineering, textiles, timber, foodstuffs, clothing, and building.

According to official figures for 1927, there were 674 strikes, which affected 6924 plants; the number of strikers totaled 187,687, as compared with 57,608 in the previous year; lost working days numbered 2,442,694, as against 891,606 in 1926. The number of lockouts was 96, affecting 1918 plants; the number of workers affected was 213,611, and the number of working days lost was 2,176,142. Wage disagreements were the principal source of labor difficulties, and they occurred principally in the textile, mining, and tobacco industries. Disagreements about working time played a considerable part in the machinery and ceramic industries.

COMMERCE. Germany's foreign trade in 1927 was noteworthy for its greatly increased total turnover and the very considerable excess of imports over exports; whereas in 1926 the total trade amounted to 19,734,600,000 marks, that of 1927 aggregated 24,361,800,000 marks. The 1927 deficit, however, reached the figure of 3,924,600,000 marks, whereas in the previous year trade was very nearly balanced. Nevertheless the character of the trade in 1927 may be said to have

been much more normal and healthy than in any other post-war year. It is true, of course, that imports exceeded those of 1926 by, roughly, 4,192,000,000 marks, but such a condition reflected the high degree of activity which characterized practically every line of German industry throughout the year. In addition the 1925 stocks which had contributed so largely to the reduction of the 1926 deficit were exhausted, and, of course, new purchases had to be made abroad.

The import value in 1927 was not only the highest of any post-war year but also the highest ever attained in German trade, even when allowance is made for the increase in prices since 1913. On the basis of the 1913 level, for instance, the imports of 1927 would aggregate 11,400,000,000 marks, which still exceeds the 1913 total of 10,769,700,000 marks. Exports participated also in the general growth of trade in 1927, although, naturally, not to the same extent as imports; they did, however, exceed those of 1926 by 435,300,000 marks and thus reached a record high level for post-war years, with a total of 10,218,800,000 marks. Another and possibly even more encouraging feature with regard to the 1927 figure was that, if it were converted on the basis of 1913 prices, it would amount roughly to 7,600,000,000 marks, or 75 per cent of pre-war exports. This ratio would naturally be higher if it were not for the territorial losses suffered by Germany in 1919.

The high import excess and the greatly increased volume were conditioned in part by the influx of foreign capital as represented by foreign loans contracted during 1927. Then again, the year was for the country as a whole, and for industry in particular, one of general economic progress. This may be seen in the heavy gain in raw-material imports, which also reached a record figure. A rise in the imports of finished goods was also noticeable, but this reflected not only the more prosperous condition of the country but also the general industrial activity, for a large part of these imports included goods which were destined for reexport after undergoing finishing operations.

Despite the fact that imports of foodstuffs were proportionately lower to total imports than in 1926, they showed an absolute gain of approximately 772,000,000 marks. This condition may be traced in part to the fact that relatively unfavorable crops of 1926 and the retarded crops of 1927 necessitated increased purchases from abroad, and in part to the greater consumption of certain foodstuffs. With respect to exports, losses were registered both in foodstuffs and raw materials; the losses in the latter group were, of course, due to restricted sales of coal, whereas these had been exceptionally high in the previous year as a result of the British strike.

During 1927, 11 articles accounted for 78 per cent of the total German imports from the United States. They were: Cotton, 668,800,000 marks; copper, 228,700,000; wheat, 184,600,000; mineral oils, 127,900,000; lard and oleomargarine, 125,500,000; barley, 98,100,000; fruit, 49,900,000; lumber, 39,100,000; rye, 35,700,000; motor vehicles and motor cycles, 35,700,000; resin, shellac, and rubber, 22,700,000. While imports of foodstuffs were practically the same as in 1926, raw materials showed an increase of 360,000,000 marks, in which cotton, mineral oils, and copper took part. The small gain in

German exports to the United States were distributed principally among hides for fur preparation and coal tar and oils. Total imports from the United States were valued at 2,072,900,000 marks in 1927 and total exports to the United States at 776,200,000 marks.

FINANCE. The actual revenues of the Government for the fiscal year 1926-27 (ending March 31) exceeded the estimates to such an extent as to make a surplus of nearly 200,000,000 marks. The estimated budget for 1927-28 was balanced at 8,657,320,000 marks but was expected to show a surplus. According to official figures made public in the spring, the German Government receipts from taxes, customs, and other sources for the fiscal year ended Mar. 31, 1928, amounted to 8,490,395,000 marks, as compared with an estimated 8,460,500,000 marks. The income tax brought in 2,784,300,000 marks as against an estimate of 2,775,000,000; the turn over tax, amounting to 877,600,000 marks, was slightly below the estimated figure of 890,000,000. Similarly, customs returns were slightly below the estimates, aggregating 1,250,900,000 marks as against 1,255,000,000 marks.

The budget for 1928-29 which was not adopted before the close of the year was expected to balance at approximately 10,000,000,000 marks. The increase was largely due to the extra reparations payments demanded from the regular budget during the year. As the year closed it appeared that there would be considerable opposition to the Government's proposals, with the possibility that a temporary budget would have to be adopted because of hostility to the proposals of Finance Minister Hilferding.

Germany's total borrowing in 1927, both long- and short-term, amounted to 1,509,860,000 marks, a decrease of nearly 11 per cent from the high record of 1926 and an increase of 16 per cent over the amount for 1925. Of the 1927 total, 1,383,860,000 marks, or 92 per cent, represented long-term loans. The outstanding feature of the 1927 borrowing was the large increase in long term loans to private enterprises, which were 75 per cent of the total as compared with 46 per cent in 1926, and amounted to 1,038,240,000 marks, an increase of nearly 44 per cent over 1926. There was a corresponding decrease in long-term loans to public bodies and public enterprises, the 1927 total of 331,760,000 marks being less than half that for 1926. The only short-term loans in 1927 were to public bodies and amounted to 126,000,000 marks, compared to a total of 117,600,000 marks in 1926, of which 79,800,000 represented loans to public bodies in that year. Since the Dawes loan of 1924, and up to the end of 1927, German foreign borrowing amounted to 4,544,990,000 marks. Long term loans accounted for 4,250,990,000 marks, or nearly 94 per cent of the total. Of these long-term loans, 56 per cent went to private enterprises, 26 per cent to public bodies, 16 per cent to public enterprises, and 2 per cent to church corporations.

The short-term loans totaled 294,000,000 marks, of which 77 per cent went to public bodies, 17 per cent to private enterprises, and 6 per cent to public enterprises. Although the United States supplied 2,957,880,000 marks, or nearly 70 per cent, of the total long-term loans from 1924 through 1927, its proportion in the yearly total decreased from 74 per cent in 1925 to 64 per cent in 1927.

RAILWAYS. The Government railroads are managed and administered by the German Railways Co., but remain the property of the State. In addition to the State Railways there were 2277 miles of normal-gauge line in 1926, which belonged to private companies. The State Railways showed a great gain in freight traffic in 1927 as compared with preceding years. Tons of freight carried increased by nearly one-fourth over 1926, and ton-mileage by about the same proportion.

GERMAN STATE RAILWAYS IN 1927

Length of line	miles..	33,320
Locomotives	number..	25,577
Passenger cars	do.....	62,954
Freight cars	do.....	672,541
Passengers carried	millions..	1,924
Passenger miles	do.....	28,400
Freight carried	1000 metric tons..	489,000
Freight ton-miles	millions..	45,120
Train miles	thousands..	.....
Gross receipts ^a	million marks..	5,011
Passenger service	do.....	1,373
Freight service	do.....	3,626
Gross receipts, equivalent (\$1,000,000)		1,191

^a Including miscellaneous receipts not shown separately.

At the end of the year it was reported that the German Government Railways were becoming rather alarmed over the competition given by automotive vehicles. The railway company estimated that in 1927 this competition cut down the revenues by 250,000,000 marks out of a total income of 5,000,000,000 marks. The estimate of revenue losses for 1928, on account of long-distance transportation of passengers and freight by automotive vehicles, was 400,000,000 marks. The railways certainly felt the fact that the goods which bear the highest freight rates were those which were most transported over long distances by trucks. The railways were in doubt whether to reduce rates in competition with trucks or to set up their own system of automotive transportation in competition with private companies.

SHIPPING. For the year ended June 30, 1927, the merchant marine of Germany consisted of 1990 vessels of 3,363,046 gross tons. In 1926, 69,494 vessels (with freight) of 30,178,212 tons and 16,735 vessels (in ballast) of 7,603,838 tons entered the ports of Germany and 68,257 vessels (with freight) of 30,041,598 tons and 20,242 vessels (in ballast) of 7,412,122 tons cleared.

For ARMY and NAVY see under MILITARY PROGRESS and NAVAL PROGRESS.

GOVERNMENT. Under the constitution of the republic adopted July 31, 1919, and promulgated Aug. 11, 1919, executive power is vested in the president elected by the people for seven years, and in a ministry appointed by him and responsible to the Reichstag or Parliament. Legislative power is vested in the Reichstag, consisting of 493 members, who are elected by universal, equal, direct, secret franchise of male and female voters, on the principle of proportional representation; and in a federal council, the Reichsrat, consisting of 68 members (Prussia, 27, Bavaria, 11, Saxony, 7, Württemberg, 4, Baden, 3, other states, 16). The consent of the Reichsrat is required to all bills before their introduction into the Reichstag, but the latter body may pass a bill over the heads of the former by a two-thirds vote.

The president in 1928 was Paul von Hindenburg, elected Apr. 26, 1925; assumed office,

May 12, 1925. The cabinet was composed as follows: Chancellor and Minister for the Occupied Provinces, Dr. Wilhelm Marx (Centre party); Foreign Affairs, Dr. Gustav Stresemann (German People's party); Home Affairs, Dr. Von Keudell (German National People's party); Finance, Dr. Köhler (Centre); Defense, Lieut.-Gen. Wilhelm Groener; Labor, Dr. Heinrich Brauns (Centre); Food and Agriculture, Martin Schiele (German National People's party); Posts, Dr. Schaetzel (Bavarian People's party); Transport, Dr. Wilhelm Koch (German National People's party); Economic Affairs, Dr. Julius Curtius (German People's party).

HISTORY

SITUATION AT THE BEGINNING OF THE YEAR. The year opened with the Marx cabinet in a rather precarious position because of the continued dispute over the educational bill and the religious question, which have been discussed in previous YEAR BOOKS. About the middle of January a change in the cabinet took place, Dr. Otto Gessler being superseded by Lieut.-Gen. Wilhelm Groener. Dr. Gessler had been the stormy petrel of German politics for a number of years and had caused considerable trouble with the allied countries over the question of the position of the army in Germany. He had served through fifteen successive cabinets since his first appointment in 1919. During the first years of his service he had been bitterly attacked by the Right as being too republican, but in his later years he was attacked by the Left because of his conservatism and his gradual swing to the Nationalists.

THE ELECTIONS. Probably the outstanding event in the history of Germany during the course of the year was the general elections held on May 20, which resulted in decided gains for the Socialist group and corresponding losses for the Nationalist and pro-Kaiser groups. Altogether about 30 parties contested the election. It appeared that the chief issue was the continuation of Foreign Minister Stresemann's policy of international peace and reconciliation. The parties of the Left were naturally in favor of such a scheme, while the parties of the Right were just as naturally opposed to it. The results of the election carried out the expectations of pre-election observers, who predicted a swing to the Left. The Socialists and Communists increased their strength tremendously, while the Nationalists suffered their worst defeat since the establishment of the republic. The Centre party was considerably weakened by the swing to the Socialists and it was apparent on all sides that the Marx ministry would have to go. The Communists polled one-fourth of all the votes in the city of Berlin and increased their seats in the Reichstag from 45 to 54. The Socialists increased their seats from 131 to 152, while the representation of the German Nationalists was reduced from 111 to 73. The German people's party lost six seats and the Centrists seven.

NEW CABINET. As a result of the elections it was found necessary to organize a new cabinet. This was no easy task inasmuch as there was no common ground on which the parties of the Left could unite. The task of forming a government was given to Hermann Müller, the Socialist leader, who had formed a ministry in the early days of the republic, which lasted only a

few months. After laboring almost all the month of June he succeeded in getting together a group which consisted of leaders of five parties, The Socialists, Centrists, Democrats, German People's party, and Bavarian People's party. It was composed as follows: Chancellor and Minister of Labor, Hermann Müller (Socialist); Interior, Carl Severing (Socialist); Finance, Rudolf Hilferding (Socialist); Justice, Alvin Saenger (Socialist); Foreign Affairs, Dr. Gustav Stresemann (German People's party); Economic Affairs, Julius Curtius (German People's party); Food and Agriculture, Hermann Dietrich (Democrat); Defense, Lieut.-Gen. Wilhelm Groener (Centre); Transportation, Joseph Wirth (Centre); Posts, Dr. Schaetzel (Bavarian People's party).

In his introductory speech to the Reichstag, Chancellor Müller stated that the general foreign policy of Dr. Stresemann would be carried on by his government. In touching upon internal affairs the Chancellor was very careful to avoid any reference to the educational and religious issues, but limited himself to promising a reduction in taxation and appealing for the stabilization of German political life. His government was given a vote of confidence by the large majority of 261 to 134. Before it adjourned on July 13, the legislature passed a general amnesty bill releasing several thousand political prisoners, a tax bill reducing income taxes, and measures designed to relieve the financial stringency of the country.

On August 11, the entire country celebrated with appropriate ceremonies the anniversary of the adoption of the Weimar constitution. The balance of the year passed very quietly in German political life. The Reichstag did not reassemble until November 12 and was immediately confronted with a discussion of the budget which was not settled as noted above under FINANCE before the close of the year.

The last month of the year was taken up with a discussion pro and con of the industrial dispute in the Ruhr. The employers refused to accept an arbitral award of an increase in pay and locked out 250,000 workers. The Reichstag appropriated 20,000,000 marks for the relief of the workers, who were out of employment for five weeks. They finally went back on the old wage and hour scale, while the dispute was under advisement of Dr. Severing, Minister of the Interior. His final decision reduced the hours of labor and granted a wage increase which was below that of the original award of the arbitration commission. In the meantime the original award and the entire fabric of the Arbitration Law was to be passed on by the Supreme Court. This was not done before the close of the year. Upon the decision of the court rested the entire governmental control of disputes between workers and employers. Up to this time decisions reached under the law had been accepted by both sides.

See ARBITRATION, INTERNATIONAL; KELLOGG TREATIES.

GENERATORS. See DYNAMO-ELECTRIC MACHINERY.

GENETICS. See BOTANY.

GIANNINI FOUNDATION OF AGRICULTURAL ECONOMICS. See AGRICULTURAL EXPERIMENT STATIONS.

GIBRALTAR. A possession of Great Britain on a small peninsula, comprising the Rock of

Gibraltar, on the southwest coast of Spain, commanding the entrance to the Mediterranean Sea. Area, $1\frac{1}{2}$ square miles; population, at the census of 1921, 20,638, of whom 2932 were military and 546, naval. On Jan. 1, 1927, the fixed population was estimated at 16,150, and there were also about 1153 aliens. The inhabitants are chiefly descendants of Spanish and Italian settlers, and in religion are Roman Catholics. Education is compulsory between the ages of 5 and 14. In 1926-27 there were 13 Government-aided elementary schools with 2630 pupils. There are also five secondary schools. The revenue in 1926 was £158,636 and the expenditure, £147,942. Trade is mainly transit. Vessels entered in 1926, 4327 of 6,121,288 tons; cleared 2269 of 5,318,496 tons. There is cable connection with the continent, with eastern Mediterranean ports, and with England. Gibraltar is under a governor who is also commander-in-chief. He is assisted by an executive council which was established in 1922. Governor in 1928, General Sir Charles C. Monro.

GIFTS AND BENEFACTIONS. See UNIVERSITIES AND COLLEGES.

GILBERT, HENRY F. An American composer, died in Boston, May 19. He was born in Somerville, Mass., Sept. 26, 1868. After graduation from the New England Conservatory, in 1888, he continued his studies in composition for three years with McDowell. His first compositions, which were published by the Wa-Wan Press, of which he was one of the founders, are the earliest impressionistic works by an American composer. At the time they attracted little attention. An exhaustive study of Negro and Indian melodies brought about a complete change of his style. With his *Comedy Overture on Negro Themes* (1906) he abandoned forever the vagueness of impressionism and developed an individual style characterized by simplicity of melodic and harmonic structure. This overture, which gained for its composer national recognition, was followed by other orchestral works: *Americanesque* (1907), *American Dances* (1911), a symphonic poem, *Dance in Place Congo* (1912), *A Negro Rhapsody* (1913), and a symphonic prologue, *Riders to the Sea* (1914). In the latter the composer employs Celtic folk-songs. Other works are *Salammbô's Invocation to Tanith* (for soprano and orchestra), *Indian Sketches* (for chorus and orchestra), a few piano compositions, and songs. The great popularity of the *Dance in Place Congo* induced the author to expand the work into a ballet which was produced at the Metropolitan Opera House, New York, in 1918.

GIOLITTI, GIOVANNI. Italian statesman, five times premier of his country, died at Cavour, Italy, July 17. He was born at Mondovì, Italy, Oct. 27, 1842, and was educated at Turin. As a young man he entered the service of the finance department of the Government, and he had reached the post of chief inspector when he was elected to the Chamber of Deputies in 1874. In 1889 he became minister of the treasury and in the following year minister of finance, which position he was compelled to resign soon afterward because of his policy of extreme economy. After the fall of Rudini, whose financial policy he had stoutly opposed, Giolitti became prime minister for the first time, in May, 1892. Although constantly opposed by the Chamber of Deputies, Giolitti, in his first term as premier, succeeded in introducing many needed reforms

in favor of the lower classes. In November, 1893, he resigned on account of the bank scandals, and especially on account of his friendly relations with Tanlongo, director of the Banca Romana, who had issued duplicate notes and had corrupted government officials, and whom Giolitti had appointed to the Senate. A parliamentary investigation acquitted Giolitti of personal dishonesty, but his retirement was forced. He remained in retirement several years, but in 1901 returned to power as minister of the interior in the Zanardelli cabinet. He was the real head of the Government, and, when Socialist agitation compelled Zanardelli to retire, Giolitti became premier, for the second time, in October, 1903, after he had resigned as minister in 1901. Before taking the portfolio as premier he had favored the Socialists, but once he was seated in the highest place of power he opposed them, and they forced him out in March, 1905. His third premiership began in May, 1906, when he succeeded Sonnino, and he held the office until December, 1909. Another term as prime minister followed before the World War. It terminated Mar. 4, 1914, after his colonial budget had been defeated. When the War broke out in August, 1914, he was in favor of a strict neutrality on the part of Italy, and when the question of participation by his country against her former partners in the Triple Alliance became acute in 1915, he attempted to overthrow the Salandra cabinet, which favored Italian entry into the War. Giolitti's influence in Parliament was strong, but the people of Italy were for war and his opposition failed. Throughout the course of the War, he was looked on as a "defeatist," and was out of favor, but the unsatisfactory peace conditions and the post-war troubles of Italy brought him once more into power, in May, 1920. His stay in office was short (until April, 1921), and was marked by a successful foreign policy. The internal programme was dominated first by the Socialists and then by the Fascists. He was defeated in the election of April, 1921, and resigned in June of the same year. Thereafter he played no large part in public life, but the Matteotti affair brought him forward again as a moderate opponent of the Fascist régime. He advocated parliamentarianism as against Mussolini's "strong man" ideas. Mussolini and his followers seemed to regard Giolitti as an "elder statesman" with antiquated notions of government, and treated him with tolerance. In 1922 he published *Memories of My Life*, in two volumes.

GIRL SCOUTS. A non-sectarian organization for girls started in Savannah, Georgia, in 1912, and incorporated under the laws of the District of Columbia in June, 1915. The plan for Girl Scouting is not a copy of the Boy Scout programme, although both organizations were founded by Sir Robert Baden-Powell, but it is rather a development of the Girl Guide movement, changed and adapted to meet the needs of American girls. The purpose of the organization is to help girls to realize the ideals of womanhood, as a preparation for their responsibilities in the home and service to the community; it aims to give girls, through natural, wholesome pleasures, those habits of mind and body which will make them useful, responsible women, to develop initiative, self-control, self-reliance, and service to others. When a girl becomes a scout she makes the following promise: "On my honor, I will try; To do my duty to God and my Country; to help

other people at all times; to obey the Scout Laws."

The unit of the organization is the troop, which is composed of one or more patrols. There are eight girl scouts in each patrol. The activities of the troop are developed through the Patrol System, under a Patrol Leader who is appointed from the group. The girls advance by a merit system which was developed by Sir Robert Baden-Powell.

The total active membership of the organization as of Sept. 30, 1923, was 186,634. There are 12 summer national training schools for Girl Scout leaders and young women who are interested in training for volunteer leadership. During 1927, 930 young women attended these schools. Continuing the work which was established as the result of a five-year experiment of giving Girl Scout training courses in colleges and institutions of higher learning, made possible by an appropriation from the Laura Spelman Rockefeller Memorial, it was further possible, through a contribution from the Julius Rosenwald Fund, to conduct, from October, 1927, to May, 1928, Girl Scout training courses in volunteer leadership in 38 different colleges and institutions of higher education, in 22 States, with an enrollment of 1330. Other training courses were given either locally or through educational institutions to 6505 Girl Scout leaders, who were encouraged to take up Girl Scout work in their own communities after leaving college. The Girl Scout programme extended to 27 leading counties in 1928. The official organ for Girl Scouts is *The American Girl Magazine*, and for leaders, *The Girl Scout Leader*, each a monthly publication. The budget for the year 1929 totaled \$367,327. The officers for 1929 are: Mrs. Calvin Coolidge, honorary president; Mrs. William H. Hoffman, president; Mrs. Herbert Hoover, first vice-president; Mrs. Arthur O. Choate, Mrs. Julius Rosenwald, Mrs. Vance C. McCormick, Mrs. Frederick Edey, Mrs. A. Clifford Shinkle, Mrs. William M. Chester, vice-presidents; Mrs. Nicholas F. Brady, chairman of board of directors; Mrs. Edgar Rickard, treasurer; Mrs. Julius H. Barnes, corresponding secretary; Mrs. Jane Deeter Rippin, national director; Chauncey Belknap, counsel. The national headquarters are at 670 Lexington Avenue, New York City.

GLACIERS. See GEOLOGY.

GLOZEL CONTROVERSY. See PHILOLOGY, MODERN.

GLYCERINE. See CHEMISTRY, INDUSTRIAL.

GODDARD, PLINY EARLE. American anthropologist, died at Newtown, Conn., July 13. He was born at Lewiston, Me., Aug. 24, 1869. He was graduated from Earlham College, 1892, and received his Ph.D. from the University of California in 1904. He was instructor in anthropology at the University of California, 1901-06, and assistant professor, 1906-09; then he became associated with the American Museum of Natural History, New York City, first as assistant curator of anthropology, 1909-10, then as associate curator, 1910-14, and from 1914 until his death as curator. He was also a lecturer on anthropology at Columbia University. He was a member of the American Anthropological Society and of the American Folk-Lore Society, and a fellow of the American Academy of Arts and Sciences. He wrote: *Life and Culture of the Hupa* (1903); *Hupa Texts* (1904); *The Morphology of the Hupa Language* (1905); *The Phonol-*

ogy of the Hupa Language (1907); *Kato Texts* (1909); *Indians of the Southwest* (1913). He was joint editor of *The International Journal of American Linguistics*.

GOETHALS, GEORGE WASHINGTON. American military and civil engineer, engineer in chief of the Panama Canal, and first civil governor of the Panama Canal Zone, died at New York, January 21. He was born at Brooklyn, N. Y., June 29, 1858. After studying at the College of the City of New York, he entered the U. S. Military Academy. He was graduated in 1880 second in his class, and was appointed a second lieutenant in the Corps of Engineers, United States Army. After completing a special course in engineering at the Engineer School at Willets Point, where he remained two years, Lieutenant Goethals was assigned in 1882 to duty as engineer officer of the District of Columbia. Later in 1882 he was made a first lieutenant and received his first important engineering duty as assistant to the officer in charge of the improvements on the Ohio River near Louisville, Ky. A year later he was back at West Point as assistant professor of military engineering, and in 1888 he became principal assistant professor, remaining at the Military Academy another year.

His greatest task before the construction of the Panama Canal was, in his own opinion, the improvement of the Tennessee River below Chattanooga, Tenn., and the building of the canal around Muscle Shoals. He was made a member of the board of fortifications, and in 1903 a member of the general staff of the United States Army. In 1907 President Roosevelt, having decided that all bids for the construction of the Panama Canal should be rejected, and that, instead of leaving the work in charge of a civilian commission, the Government should undertake the construction, he appointed Goethals (then a colonel) chairman, as well as chief engineer, of a new commission, composed on its technical side of army and navy officers. An able engineer, familiar with the conditions attending the prosecution of government work, and a man of force and resources, strong in personality and able to inspire confidence and energy in others, Colonel Goethals straightway developed a system by which the building of the Canal could be done and the many allied problems could be solved. He soon had the entire work of design organized, so that the actual construction could be undertaken at a rate not before realized—a rate which constantly improved with the progress of the canal.

Colonel Goethals, who regarded his work as that of an administrator rather than as that of an engineer, and who possessed a peculiar genius for detail, received ample executive powers. Largely through the exceedingly important services of the late Gen. William C. Gorgas, of the U. S. Army Medical Department, the questions of sanitation, commissary, housing, and labor were all satisfactorily answered, and a complete social fabric, as well as a construction organization, was developed. The Panama Canal came to be known as a scene of industrial contentment no less than as a piece of sound engineering and a model of efficient labor. So vigorously was the work prosecuted that its virtual completion was possible in 1914, although the time schedule had called for completion in June, 1915. Colonel Goethals received unstinted praise from visiting engineers and from the technical

press of the entire civilized world. In 1913 the degree of LL.D. was conferred on him by the University of Pennsylvania, and in the spring of 1914 he was awarded medals by the National Geographic Society and the Civic Forum (New York) and the National Institute of Social Sciences.

Late in 1913 and early in 1914 he was much in demand for various administrative positions. He declined the police commissionership of New York and the city managership of Dayton, Ohio. On Feb. 13, 1914, President Wilson appointed him the first civil Governor of the Panama Canal Zone. This position he held until 1916, when he resigned and was made chairman of the board of inquiry in regard to the Adamson eight-hour law. He had been promoted to major general in 1915. He was state engineer of New Jersey in 1917 and in the same year became manager of the Emergency Fleet Corporation. Because of his lack of faith in the wooden fleet, he resigned after three months, and was appointed acting quarter-master general of the United States Army. In 1918 he was made chief of the division of purchase, storage, and traffic, and was also a member of the War Industries Board. At his own request, he was retired in 1919, after forty years' service, and he then became head of an engineering and construction company in New York. He had retired from this work several months before his death. General Goethals was associated with the Port of New York Authority for several years, and had much to do with the planning of the Holland tubes under the Hudson River between New York and Jersey City and with the plans for the bridge between New York and Fort Lee, N. J. He was the recipient of numerous honors, civic, military, and scientific, including the degree of LL.D. from the University of Pennsylvania and Princeton University. In 1915 the Congress of the United States thanked him formally, on behalf of the nation, for "distinguished service in constructing the Panama Canal."

GOITRE. OBJECTIONS TO IODIZED SALT AND DRINKING WATER. Despite the overwhelming evidence that goitre is favored by shortage of iodine in the soil water, evidence occasionally comes to light that goitre can prevail in regions where there is no iodine scarcity and may be absent where iodine scarcity is notable. It does not appear that in Great Britain there is any correlation between the two factors, although in parts of the world where the disease is highly prevalent this relationship is accepted as truth. This information is supplied from reports of the Rowett Research Institute at Aberdeen.

It has further been noted that the use of iodized salt is liable to cause acne in young women, who are most disposed both to ordinary acne and goitre. The acne from iodine disappears when the use of the salt is discontinued, but will return as soon as it is resumed. It is therefore possible that women and girls will object to this interference with their personal appearance.

GOLD. The U. S. Bureau of the Mint, with the cooperation of the U. S. Bureau of Mines, prepared the following statement of the preliminary estimate of refinery production of gold in the United States during the calendar year 1928: based on arrivals at U. S. Mints and Assay Offices and private refineries.

States	Gold	
	Ounces	Value
Alaska	309,668	\$6,401,400
Arizona	184,522	3,814,400
California	522,822	10,807,700
Colorado	253,577	5,241,900
Georgia	24	500
Idaho	20,545	424,700
Illinois .....	.....	.....
Michigan .....	.....	.....
Missouri .....	.....	.....
Montana	57,644	1,191,600
Nevada	174,895	3,615,400
New Mexico	31,705	655,400
North Carolina	34	700
Oregon	9,656	199,600
Pennsylvania	895	18,500
South Carolina	19	400
South Dakota	320,112	6,617,300
Tennessee	624	12,900
Texas	585	12,100
Utah	205,226	4,242,400
Washington	15,557	321,600
Wyoming	34	700
Philippine Islands	86,151	1,780,900
Totals	2,194,295	45,360,100

Production of Gold in Canada during 1927 amounted to 1,852,785 fine ounces valued at \$38,300,464, as compared with 1,754,228 fine ounces valued at \$36,263,110 in 1926. This establishes a new record. As a world producer of gold, Canada ranks third, with the Union of South Africa first and the United States second. In 1928 the gold output was expected to exceed that of 1927. The world production of gold in 1928 was estimated at \$417,000,000, an increase from \$412,000,000 in 1927, the increase coming from the Transvaal. This region in 1928 had an estimated production of \$220,000,000 as against \$215,000,000 in 1927. For commercial movement of gold in 1928, see FINANCIAL REVIEW.

WORLD PRODUCTION OF GOLD, 1927

[The production figures given below are from the report of the Director of the Mint.]

Country	Kilos, fine	Ounces, fine	Value
North America:			
United States ...	65,855	2,117,253	\$43,767,500
Canada	57,373	1,844,544	38,130,108
Mexico	22,556	725,175	14,990,698
Total	145,784	4,686,972	96,888,306
Central America and West Indies ¹	2,257	72,563	1,500,000
South America:			
Argentina ¹	30	967	20,000
Bolivia	8	241	4,982
Brazil	3,111	² 100,000	2,067,183
Chile	1,866	² 60,000	1,240,310
Colombia	2,257	72,563	² 1,500,000
Ecuador	1,998	64,242	1,328,000
Guiana—			
British	178	5,714	118,119
Dutch	239	7,684	158,842
French	1,504	48,354	999,566
Peru	2,882	92,656	1,915,369
Venezuela	³ 1,224	39,366	³ 813,767
Total	15,297	491,787	10,166,138

Europe:			
Austria	4	129	2,667
Czechoslovakia ...	233	² 7,500	155,039
France	1,400	45,010	930,439
Germany	156	² 5,000	103,359
Great Britain .....	.....	.....	.....
Greece	15	482	9,964
Italy	67	2,154	44,527
Norway .....	.....	.....	.....
Poland .....	.....	.....	.....
Rumania	2,058	66,165	1,367,752
Russia	² 33,000	1,060,950	21,931,783
Spain	30	967	² 20,000
Sweden	² 460	14,789	305,716

WORLD PRODUCTION OF GOLD, 1927.—Continued
[The production figures given below are from the report of the Director of the Mint.]

Country	Kilos, fine	Ounces, fine	Value
Turkey	² 30	964	19,927
Yugo-Slavia	386	12,410	256,537
Total	37,839	1,216,520	25,147,710
Asia:			
British India	11,952	384,268	7,943,524
China	3,110	² 100,000	2,067,183
Chosen (Korea) ..	5,910	² 190,000	3,927,648
East Indies—			
British	602	19,350	² 400,000
Dutch	3,517	113,071	2,337,385
Fed. Malay States	333	10,706	221,313
Indo-China	³ 10	321	6,635
Japan	9,580	² 308,000	6,366,925
Philippine Islands	2,467	79,314	1,639,566
Sarawak	² 8	243	5,023
Taiwan	230	² 9,000	186,046
Total	37,769	1,214,273	25,101,248

Oceanic:

Australia—			
New South Wales	561	18,032	372,754
Northern Territory	6	174	3,597
Queensland	1,181	37,979	785,096
South Australia ..	13	418	8,841
Victoria	1,199	38,533	796,651
West Australia ..	12,701	408,353	8,441,406
Tasmania	151	4,860	100,465
Papua	191	6,150	127,132
New Zealand	4,029	129,519	² 2,677,383
Total	20,032	644,023	13,313,125

Africa:

Abyssinia	672	21,605	446,615
Algeria .....	.....	.....	.....
Belgian Congo ...	3,901	125,417	2,592,599
Bechuanaland	118	3,807	78,698
British West Africa (Gold Coast, Ashanti, Nigeria)	5,338	171,607	3,547,431
Egypt	2	64	1,323
French West Africa	213	6,848	141,561
Kenya Colony ...	20	655	13,540
Madagascar	322	10,352	213,995
Portuguese East Africa	296	9,521	196,816
Rhodesia—			
Northern	11	350	7,235
Southern	18,085	581,438	12,019,390
Southwest Africa ..	31	984	20,341
Swaziland	35	1,135	23,462
Sudan	223	7,166	143,145
Tanganyika	255	8,179	169,075
Transvaal, Cape Colony, and Natal	314,852	10,122,491	209,250,460
Total	344,374	11,071,619	228,870,686
Total for world	603,352	19,397,757	400,987,213

¹ Estimate based on United States imports of ore in bullion.

² Estimate based on other years' production.

³ Amount exported.

GOLD COAST. A colony on the Gulf of Guinea in Africa belonging to Great Britain; bounded by the French Ivory Coast on the west, the French Sudan on the north, Togoland on the east, and extending on the south for 334 miles along the Gulf of Guinea; comprising in addition to the colony proper, Ashanti and the Northern Territories. The area of the three divisions is estimated at 80,000 square miles; population at the census of 1921, 2,078,043, of whom 2165 were Europeans. The capital and chief town is Accra, with a population of 38,000. Other large towns are Cape Coast (15,000), Sekondi (10,000), and Keta (10,000). In 1925-26 there were 22 government schools and 221 assisted schools,

which are under the control of various missions. The average attendance during 1926-27 at the primary and secondary schools was 29,332. There were also a large number of unassisted primary schools supported by the religious denominations.

Among the staple products, which also comprise the chief exports, are cocoa, palm oil, kola nuts, palm kernels, lumber, india-rubber, manganese, gold, and diamonds. The imports in 1927 were valued at £10,905,681; the exports, £14,005,002. The total value of the mineral products exported during the fiscal year ended Mar. 31, 1927, was £1,938,870—£803,369 for gold bullion, £715,382 for manganese ore, and £420,119 for diamonds. This valuation is the highest reached by the mineral industry of the colony. The revenue for 1926 was £4,365,321; the expenditure, £4,328,159; the public debt (Mar. 31, 1927), £11,791,000. In 1928 there were 394 miles of railway open to traffic and almost another hundred under construction. The shipping entered and cleared in the foreign trade in 1926 was 4,814,436 tons, of which 2,698,872 were British.

Ashanti, annexed by Great Britain in 1901, is under the Governor of the Gold Coast, although it has its own local laws and ordinances. The population at the census of 1921 was 407,000 of whom 400 were Europeans. Kumasi, with 20,000 inhabitants, is the chief town. In 1926-27 there were 789 pupils in the government schools and 3091 in the mission schools. The forests in the western part are rich in mahogany, cedar, and other valuable woods, and in trees that yield rubber, oil and gum copal, and fruits. Imports in 1926-27, £4,013,969; exports, £5,068,324; revenue, £102,214; local expenditure (except railway, posts, and telegraphs), £427,417.

The Northern Territories, constituted a British protectorate in 1901, are also under the Governor of the Gold Coast but locally administered by a high commissioner, with his headquarters at Tamale. Area, 35,000 square miles; population at the census of 1921, 527,914, of whom only 49 were Europeans. Navaro is the chief town with a population of about 15,000. Local revenue in 1926-27, £19,027; local expenditure, £118,793. Governor of the Gold Coast in 1928, Sir Alexander R. Slater; Chief Commissioner of Ashanti, T. S. W. Thomas; Chief Commissioner of Northern Territories, Maj. A. H. C. Walker-Leigh.

GOLF. Robert T. Jones, Jr., Johnny Farrell, Leo Diegel, Walter Hagen, Carl Kauffmann, T. P. Perkins, Miss Glenna Collett, and Mlle. Manette Le Blan were the leaders in golf during 1928. Jones for the fourth time captured the American amateur title, thus tying the mark set by Jerome D. Travers. Jones also put up a valiant battle to win the open championship. He was tied with Johnny Farrell, young professional, at the end of 72 holes only to lose out on the play-off. Diegel's greatest feat of the year was his victory in the Professional Golf Association tourney, where he successfully came through a field comprised of such players as Gene Sarazen, Walter Hagen, and Al Espinosa. Diegel also won the Canadian open title. Hagen scored the third triumph of his colorful career in the British open, but lost the P. G. A. honors which he had held for a period of four years. Kauffmann distinguished himself by winning the public links championship for the second year in succession. Perkins captured the British amateur

title. Miss Collett took the women's American amateur title for the third time and stamped herself as the foremost woman golfer of the day. Mlle. Le Blan was the victor in the British women's classic.

An international contest of paramount importance was the Walker Cup match held at Wheaton, Ill., the United States team winning 11 of the 12 competitions. The summary of the Walker Cup matches follows:

Jones, United States, defeated Perkins, Great Britain, 13 and 12; Von Elm, United States, defeated Tweddell, Great Britain, 3 and 2; Ouimet, United States, defeated Hazlet, Great Britain, 3 and 7; Sweetser, United States, defeated Hope, Great Britain, 1 up; Johnson, United States, defeated Storey, Great Britain, 4 and 2; Evans, United States, defeated Torrance, Great Britain, 1 up; Gunn, United States, defeated Hardman, Great Britain, 11 and 10; Mackenzie, United States, defeated Martin, Great Britain, 2 and 1; Sweetser and Von Elm, United States, defeated Perkins and Tweddell, Great Britain, 7 and 6; Jones and Evans, United States, defeated Hazlet and Hope, Great Britain, 5 and 3; Ouimet and Johnson, United States, defeated Torrance and Storey, Great Britain, 4 and 2; Gunn and Mackenzie, United States, defeated Beck and MacCallum, Great Britain, 7 and 5.

The winners of the more important tournaments of 1928 were:

United States National Open, Johnny Farrell; United States National Amateur, Robert T. Jones, Jr.; United States National (women), Miss Glenna Collett; United States Professional, Leo Diegel; Canadian Open, Leo Diegel; Canadian Amateur, R. Somerville; British Open, Walter Hagen; British Amateur, William Tweddell; British Women's, Mlle. Le Blan.

Princeton University for the second successive year captured the U. S. intercollegiate team championship, the individual title going to Maurice McCarthy, Jr., of Georgetown. Cambridge University defeated Oxford.

GOODCHILD, THE REV. DR. FRANK MARSDEN. American Baptist clergyman, died at New York, February 18. He was born at Philadelphia, Dec. 26, 1860, and was educated at Bucknell University (1884) and Crozer Theological Seminary (1887). He was ordained in the Baptist ministry in 1888, and after serving in pastorates at Amenia, N. Y., and Philadelphia, became pastor of the Central Church in New York City in 1895. He served there until 1924, when he became pastor emeritus. Bucknell University conferred the degree of D.D. on him in 1904. He was a prominent figure in the affairs of his denomination, and was president of the American and Foreign Bible Society; vice president of the Baptist Union for Ministerial Education; president of the Ministers' Home Society; and held other denominational offices. Dr. Goodchild was the leader of the "fundamentalists" of the Northern Baptist Convention. He contributed many articles to the religious press, published more than 500 sermons, and was a contributing editor of the *Watchman-Examiner*, New York.

GOODING, FRANK R. United States Senator from Idaho, died at Gooding, Idaho, June 24. He was born in England, Oct. 16, 1859, and was brought to America when he was eight years old. His family first settled in Michigan, and he was educated at the public schools at Paw Paw, Mich. When he was fifteen his family moved to California, and six years later he went to Idaho. He was for many years a contractor for mining companies in the Wood River country, and for thirty-four years before his death was actively engaged in farming and the raising of livestock. He was one of the largest sheep raisers in Idaho. Mr.

Gooding's first political office was membership in the State senate. He was also chairman of the Republican State Central Committee of Idaho, and was twice elected Governor of Idaho, serving 1905-08. He was elected to the United States Senate in 1920 for the term 1921-27, but before beginning his own term he was appointed to fill the vacancy caused by the resignation of Senator Nugent. In 1926 he was again elected for a full term. His name was given to the county and town of Gooding and to a Methodist Episcopal college of which he was known as a liberal benefactor.

GORDON BENNETT CUP COMPETITION. See **AERONAUTICS**.

GORDON, VICTOR. High commissioner for Newfoundland, died at London, October 6. He was born at St. Johns, Newfoundland, June 28, 1884, and after studying at St. Johns and at the Academeical Institution in Coleraine, Ireland, he worked for a time at a bank in Montreal. In 1912 he was called to the bar at the Inner Temple. He served with the British Army throughout the World War, on the Gallipoli Expedition and in Egypt and France, being seriously wounded at Monchy le Preux in April 1917 while engaged with the King's Own Scottish Borderers. Captain Gordon was made secretary of the High Commissioner for Newfoundland in 1919, and having acted as High Commissioner, 1922-24, he was given the permanent appointment. After representing Newfoundland at the Imperial Economic Conference in 1923, he served on the Imperial Economic Committee, 1925-26. He was made Companion of St. Michael and St. George in the latter year. He wrote extensively on Newfoundland.

GORDON-LENOX, CHARLES HENRY. See **RICHMOND AND GORDON, DUKE OF**.

GOSS, gös, WILLIAM FREEMAN MYRICK. American mechanical engineer and educator, died at New York, March 23. He was born at Barnstable, Mass., Oct. 7, 1859. He studied at Massachusetts Institute of Technology, 1877-79, and organized the department of practical mechanics at Purdue University, where he was dean of the school of engineering from 1890 to 1907. Thereafter he was dean of the college of engineering, director of the school of railway engineering and administration, and professor of railway engineering at the University of Illinois. He remained at Illinois until 1917, when he was made president of the Railway Car Manufacturers' Association, from which position he retired in 1925. In 1913-15 he was engineer for the committee of investigation of the smoke nuisance in Chicago. He served as president of the American Society of Mechanical Engineers in 1913. The great contributions of Professor Goss to the science of locomotive engineering were made when he was in charge of the department of practical mechanics at Purdue. He installed a full-sized locomotive, so mounted that speed and tractive effort, changeable at will, could be measured with precision, and with this he carried on tests, the results of which were transmitted annually to the American Railway Master Mechanics' Association and became embodied in improved practice in locomotive design. He received the degree of Doctor of Engineering from the University of Illinois in 1904. He was a member of many scientific societies, and wrote the following: *Bench Work in Wood* (1887; rev. ed., 1905); *Locomotive Sparks* (1902); *Locomotive Performance* (1907); *Super-*

heated Steam and Locomotive Service (1910); *Tests of a Jacobs-Shupert Boiler* (1921).

GOSSE, gös, SIR EDMUND WILLIAM. English poet, critic, and biographer, died at London, May 16. Born at London, Sept. 21, 1849, he was educated privately and did not have a university training, nevertheless later he received, in recognition of his services to letters, honorary degrees from the universities of Cambridge, St. Andrews, Strasburg, Gothenburg, and Paris (the Sorbonne). He received also a knighthood from King George (1925), and was a commander of the Legion of Honor of France and a member of orders of knighthood of Norway, Sweden, and Denmark. In 1867 he became assistant librarian of the British Museum, London; in 1875, translator to the Board of Trade; in 1884, Clark lecturer in English literature at Trinity College, Cambridge; and in 1904, librarian to the House of Lords. In 1884 he visited the United States, lecturing at Harvard, Yale, Johns Hopkins, and other universities. He was chairman of Scandinavian studies at University College, London, from 1917 until his death, and became president of the English Association in 1921. The especial field of literature cultivated by Gosse was that of combined biography and criticism, and his writings evinced wide knowledge and clear and well-balanced judgment. He was an accomplished linguist, especially in the Scandinavian languages, and it was he who, in his *Northern Studies*, introduced Henrik Ibsen and other Scandinavian writers to the notice of English readers. His obituary of Queen Victoria, published anonymously in January, 1901, in the *Quarterly Review*, was the literary sensation of the season. Gosse produced many books in verse and prose. Among them were: *Madrigals, Songs, and Sonnets* (1870); *On Viol and Flute* (1873); *Northern Studies* (1879); *History of Eighteenth Century Literature* (1889); *The Jacobean Poets* (1894); *Short History of English Literature* (1897); (with Richard Garnett) *An Illustrated History of English Literature* (1902); *Coventry Patmore* (1905); *Father and Son* (1907; an autobiographic work, crowned by the French Academy in 1913); *Henrik Ibsen* (1908); *Collected Essays* (5 vols., 1913); *Inter Arma* (1916); *The Life of Algernon Charles Swinburne* (1917); *Three French Moralists* (1918); *Diversions of a Man of Letters* (1919); *Malherbe* (1920); *Books on the Table* (1921); *Aspects and Impressions* (1922); *More Books on the Table* (1923); *Silhouettes* (1925); and *Leaves and Fruit* (1927).

GOUCHER COLLEGE. A non-sectarian college for women at Baltimore, Maryland; founded in 1885. The enrollment for the first semester of the year 1928-29 was 979 students, distributed as follows: First year students, 283; second year, 266; third year, 219; fourth year, 210, and graduate student, 1. The faculty had 103 members. The endowment funds of the College amounted to \$2,386,989. The library contained 40,500 volumes. President, William Westley Guth, Ph.D., LL.D.

GOYA ANNIVERSARY. See **ART EXHIBITIONS**.

GRAHAM'S LAND. See **FALKLAND ISLANDS**.

GRAIN. See **AGRICULTURE**; **RYE**; **WHEAT**; **ETC.**

GRAND ARMY OF THE REPUBLIC, THE. An order formed in 1866 among a number of former soldiers who had served in the Civil War. The first Post (No. 1) was organized in

Springfield, Ill., and given a charter by Dr. B. J. Stevenson, who had been active in securing its formation and who became the Department Commander of the States. This organization whose purpose is to enjoy "a companionship made sacred by common sufferings and sacrifices," has as its corner stones "Fraternity, Charity and Loyalty" and these demand the care and protection of sick and helpless comrades and their widows and orphans, the upholding of all comrades in their worthy endeavors, and loyalty to the flag and laws of the Republic. Auxiliary orders are the Woman's Relief Corps, Ladies of the G. A. R., Sons and Daughters of Union Veterans, and their auxiliaries. A national encampment is held in September, department encampments in June. Delegates to the national body are chosen by the Department of Encampments, and those to the Department Encampments by the Posts. The Sixty-second National Encampment was held at Denver, Colo., September, 1928, while Portland, Me., was chosen for the 1929 encampment. The officers elected for 1928-29 were: Commander-in-chief, John Reese, Broken Bow, Nebr.; senior vice commander-in-chief, James E. Jewel, Fort Morgan, Colo.; junior vice commander-in-chief, Henry J. Kearney, New York City; surgeon-general, S. W. Hopkins, Lodi, Calif.; and chaplain-in-chief, the Rev. J. King Gibson, Dayton, Ohio; trustee of the permanent fund, Louis F. Arensberg, East Millsboro, Pa. National headquarters were at 707 H. Street, Broken Bow, Nebr.

GRAPEFRUIT. See **HORTICULTURE**.

GRAPES. See **HORTICULTURE**.

GRAPHITE. The graphite industry in the United States in 1927 advanced on the whole, in spite of a slight reduction in total sales, for there was a considerable increase in the production of crystalline graphite, both in quantity and value, which more than offset a decrease in the production of the amorphous variety. Alabama, where the industry was most active during the War, experienced a revival in 1926 and 1927, after a period when the industry had almost died out, with three operators in 1927 reporting sales of 3,474,000 pounds of crystalline graphite, or two-thirds of the total output for the United States, and 74 per cent of the total value. There was also some activity in California, Michigan, Montana, Nevada, Rhode Island, Texas, and Virginia. According to statistics of the U. S. Bureau of Mines, the sales of natural graphite by producers in 1927 amounted to 5207 short tons, valued at \$232,971, a decrease of 5 per cent in quantity but an increase of 6 per cent in value, as compared with 1926. The output of the crystalline variety in 1927 amounted to 5,224,400 pounds, or 5 per cent more than in 1926. This was not only the largest output since 1920, but it exceeded the amount of amorphous graphite sold or used by producers for the first time since 1920, the value of the crystalline being \$197,121 and of the amorphous, \$35,850. Rhode Island was the largest source of amorphous graphite in 1927.

Natural graphite is used chiefly in the manufacture of pigments and paints, foundry facings, commutator brushes, crucibles, pencils, stove polish, lubricants, retorts, and batteries. Uses which were minor before the War were of much importance in 1927, as in pigments, while uses that formerly consumed large quantities were of relatively minor importance, as in the manu-

facture of crucibles. The Acheson Graphite Co., of Niagara Falls, N. Y., continued in 1927 to lead all competitors in the manufacture of graphite, its output being 12,257,239 pounds, as compared with 21,163,986 pounds in 1926, a decrease of 42 per cent in activity, but still an output greatly in excess of the total output of natural graphite. Madagascar continued to lead the world in exports of natural graphite, followed closely by Ceylon, the quantity exported being 14,239 and 13,091 metric tons, respectively. Imports of graphite into the United States in 1928 amounted to 17,591 short tons, valued at \$807,719, as compared with 17,452 short tons, valued at \$722,004 in 1927, an increase of 1 per cent in quantity, and a decrease of 12 per cent in value, as compared with 1927 figures for imports.

GRAVES, COL. CHARLES HINMAN. American soldier and diplomatist, died at Santa Barbara, Calif., October 7. He was born at Springfield, Mass., Aug. 14, 1839, and attended public schools in Boston, Mass., and Litchfield, Conn. At the outbreak of the Civil War he became sergeant in the Fortieth New York Infantry, June 27, 1861, and served throughout the war. He was commissioned second lieutenant Nov. 4, 1861, and successively promoted until at the end of the war, he was brevetted lieutenant-colonel, and colonel of volunteers, Mar. 13, 1865. He remained in the army, being commissioned first lieutenant in the Fourteenth U. S. Infantry, November 29 of that year, and was brevetted major, U. S. Army Mar. 2, 1867, for bravery at Gettysburg, and lieutenant-colonel for similar conduct at Fort Fisher. Retiring from the army in 1870, he engaged in various business enterprises at Duluth, Minn., and served in the Minnesota Senate, 1875-78. He was mayor of Duluth, 1881-83, and in 1889 was made speaker of the Minnesota House of Representatives, where he served until 1891. He acted as State capitol commissioner, 1893-1905. He was appointed United States Minister to Norway and Sweden in March, 1905, holding that position for a year, he was assigned to a similar office in Sweden, 1906-14.

GREAT BRITAIN. UNITED KINGDOM OF GREAT BRITAIN AND IRELAND. A constitutional monarchy comprising the British islands. Capital, London. Although the term literally applies only to the island including England, Scotland, and Wales, it is often used as above to include Ireland, the Isle of Man, and the Channel Islands. In view of the change in the status of Ireland, usage in this respect will probably be altered. The term British Empire applies to the United Kingdom and all its possessions and dependencies, that is to say, the dominions, colonies, protectorates, and other territories subject to the ultimate control of the British Parliament.

AREA AND POPULATION. The area of England, Scotland, Wales, the Isle of Man, and of the Channel Islands is 89,041 square miles; the area of Ireland, 32,586 square miles. (See **IRELAND**, **NORTHERN**, and **IRISH FREE STATE**.) The population of England, Scotland, and Wales in 1927 was 44,185,000. For details of the census of 1921 see **YEAR BOOK** for 1923 and preceding **YEAR BOOKS**.

The accompanying table from the *Statesman's Year Book* for 1928 gives a comparison of the estimated population (exclusive of Army, Navy, and merchant seamen abroad):

Year (30 June)	England and Wales	Scotland	Total of Great Britain
1914.....	36,960,684	4,747,167	41,707,851
1923.....	38,408,000	4,901,100	43,304,100
1924.....	38,746,000	4,881,637	43,627,637
1925.....	38,890,000	4,898,082	43,788,082
1926.....	39,067,000	4,897,000	43,964,000
1927 ^a	39,290,000	4,895,000	44,185,000

^a Provisional figures.

The provisional figures for the movement of population in England and Wales for 1927 were: Births, 654,969; deaths, 484,636; marriages, 307,818. Similar figures for Scotland were: Births, 96,669; deaths, 65,830; marriages, 32,589.

In 1927 the number of British subjects who emigrated to countries outside of Europe was 277,327; and the number of British subjects who returned from non-European countries was 173,724. The destinations of British subjects leaving the United Kingdom to take up permanent residence in non-European countries in 1926 were mainly the United States, 25,662; British North America, 52,916; Australia, 40,991; New Zealand, 7841; British South Africa, 7572; India and Ceylon, 6476.

Greater London, the largest city in the world, had a population in 1921 of 7,480,201 on the 443,449 acres covered by the Metropolitan and City Police districts. Registration London, which coincides with the administrative county and nearly coincides with the London Parliamentary boroughs, had a population of 4,484,523, with an area of 74,850 acres. The estimated population of Greater London in the middle of 1927 was 7,796,353. Birmingham, the second city of England, had a population in 1921 of 919,444 (estimated, 1927, 952,800). Liverpool continued to stand third, with 802,940 in 1921 (estimated, 1927, 872,900); and Manchester, fourth with 730,307 in 1921 (estimated 1927, 751,900). Other large cities with their populations are: Sheffield, 490,639 in 1921 (estimated in 1927, 524,900); Leeds, 458,232 in 1921 (estimated in 1927, 482,600); Bristol, 376,975 in 1921 (estimated in 1927, 385,700). Glasgow is the largest city in Scotland with a population of 1,034,174 in 1921 (estimated in June, 1927, 1,060,500); Edinburgh is next with 420,264 in 1921 (estimated in June, 1927, 426,300). The chief city of Wales is Cardiff, which had a population of 200,184 in 1921 and an estimated population of 225,600 in the summer of 1927. The census of 1921 did not include Ireland. For the populations of Australia, Canada, India, and other British possessions, see articles under those titles.

EDUCATION. Elementary instruction is free and compulsory between the ages of 5 and 14. In England and Wales in 1926 there were 21,336 schools, including public elementary, special, and certified efficient. The number of public elementary schools on Mar. 31, 1927, was 20,723, with 5,603,654 pupils on the registers and 169,702 teachers. There were also 555 special schools for the blind and deaf and for mentally and physically defective children; as well as 59 Poor Law schools, 28 nursery schools, and 265 play centres. The 109 training schools for teachers had 17,152 students, of whom 15,475 were training to teach in elementary schools. The number of secondary schools on the grant list in 1926 was 1310, with 367,290 pupils and 19,069 full-time teachers. In Scotland there were 2896 primary schools with an accommodation of 867,589 scholars; the average number on the regis-

ters was 658,963 and the average attendance 585,673. There were 18,372 certificated primary school teachers and 54 assistant teachers. In 1926-27 there were four training centres and three training colleges with 2515 students. In 1926 there were 249 secondary schools with a total accommodation of 179,814 and an average register of 152,537.

The accompanying table from the *Statesman's Year Book* for 1928 gives an estimate of the number of students and members of the teaching staff in the Universities of Great Britain in 1927-28:

Universities	Number of professors, etc.	Number of students
England:		
Oxford.....	228 ^a	4,417 ^b
Cambridge.....	346	5,475 ^b
Durham (1881).....	260	1,285
London (1836).....	1,089 ^a	9,468 ^{c,d}
Manchester (1880).....	263	2,466
Birmingham (1900).....	200	1,500
Liverpool (1903).....	389	2,038
Leeds (1904).....	315	1,415
Sheffield (1908).....	170	2,159 ^d
Bristol (1909).....	187	892
Reading (1926).....	138	1,563
Total for England.....	3,590	32,678
Scotland:		
St. Andrews (1411).....	116	700
Glasgow (1450).....	260	5,210
Aberdeen (1494).....	147	1,328
Edinburgh (1582).....	363	4,085
Total for Scotland.....	886	11,323
Wales (1903).....	363	3,526
Totals of above.....	4,839	47,527

^a Comprising 263 university professors and readers, and 826 "recognized teachers."

^b Undergraduates. ^c Internal students. In addition there are external students, i.e., matriculated students who have not taken a degree nor been registered as internal students. The number of these is not ascertainable but is probably greater than 9000.

^d Includes evening students.

^e Excluding College Tutors.

At most of the universities and university colleges women students are admitted on equal terms with men. There are, however, several colleges exclusively for female students; Bedford (62 teachers, etc., 600 students), Royal Holloway (35 teachers, 200 students), and Westfield colleges (16 teachers, etc., 147 students) in London; Newnham (11 teachers, etc., 277 students) and Girton (11 teachers, etc., 263 students) colleges in Cambridge; Lady Margaret Hall (8 teachers, etc., 134 students), Somerville College (10 teachers, etc., 156 students), St. Hugh's College (9 tutors, 150 students), St. Hilda's College (11 teachers, 108 students), in Oxford. The Society of Oxford Home Students numbered 235 students in 1928. Women were first admitted to membership of Oxford University, and to take degrees, in October, 1920.

AGRICULTURE. There were in the United Kingdom (including Northern Ireland) 14,707,000 acres of arable land in 1926, or about 24 per cent of the total area; 33,119,000 acres of permanent grass and pasture, much of it highly productive; and 295,000 acres of trees, shrubs, and bushes. Stock raising, including sheep raising, is carried on by intensive methods. The production of wool amounted to 117,676,000 pounds in 1927. The year 1927 was very unfavorable for agriculture. The price level of farm products, which was generally lower in 1926 than in any previous post-war year, fell still further. The difficult position was greatly aggravated by very unseasonable weather. Crops suffered from excessive rainfall. The tables on page 306, from the above mentioned source, show the distribution of the cultivated area and the livestock census of 1926 and 1927.

Cultivated area	England and Wales		Scotland	
	1926	1927	1926	1927
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
Corn crops ^a	5,099,582	4,901,655	1,125,850	1,090,420
Green crops ^b	2,224,626	2,216,381	569,770	567,627
Hops	25,599	23,004	.....	.....
Small fruits ^c	69,523	69,154	7,811	8,064
Orchards ^c	240,689	248,705	1,264	1,288
Bare fallow	417,664	423,443	6,125	6,150
Clover and ro- tation grasses	2,502,237	2,460,892	1,484,979	1,496,363
Permanent pasture	15,128,186	15,280,243	1,498,635	1,512,597
Total	25,676,111	25,590,330	4,693,170	4,681,221

^a Corn crops are wheat, barley or bere, oats, mixed corn, rye, beans, peas.

^b Green crops are mainly potatoes, turnips and swedes, mangold, cabbage, kohlrabi, rape, vetches or tares.

^c In Scotland all orchard land is also included against the crop, grass or fallow beneath the trees. In England and Wales orchard land is only duplicated where small fruit is grown beneath the trees. The figures for small fruit in all cases, therefore, include small fruit in orchards.

Livestock	England and Wales		Scotland	
	June, 1926	June, 1927	1926	1927
	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Horses ..	1,123,796	1,077,221	178,695	172,102
Cattle ...	6,253,085	6,275,240	1,197,828	1,210,450
Sheep ...	16,858,685	17,072,275	7,203,134	7,535,477
Pigs	2,200,012	2,691,514	145,419	196,613

MINING AND MANUFACTURING. Exports of anthracite and bituminous coal from Great Britain in 1927 amounted to 51,149,193 tons, as against 50,817,118 in 1925. Anthracite exports showed an increase of around 100,000 tons in 1927 over 1925, steam coal and household coal were about the same in each year, gas coal decreased approximately 251,000 tons, while sorts not specified increased 683,000 tons. Coke shipments declined from 2,111,757 tons in 1925 to 1,805,984 in 1927, but manufactured fuel increased from 1,160,561 tons to 1,348,861. Although exports of coal, coke, and briquets increased over 1925 shipments, their value was less in 1927.

According to the *Commerce Year Book* for 1928, the coal industry during 1927 passed through three more or less distinct phases. The first period was one of optimism, great activity, and remunerative trade, as a reaction from the disastrous mining stoppage which ended late in 1926. The second was one of intense competition, particularly for the regaining of export markets, with steadily declining price levels, increasing unemployment, substantial trading losses, and general depression. The third period, the closing months of the year, saw a continuation of depressed conditions, but with a tendency toward basic reorganization and reconstruction of the industry. This involved a movement toward centralized control of production, sales, and price levels in some of the leading districts, especially in the exporting areas. The recovery of 1927 brought the volume of coal production and exports even above the pre-stoppage level; but the decline in prices resulted in a net trading loss to the industry of £5,378,000. A steady increase in unemployment of miners occurred after the low point reached in May, 1927. There was a reduction of wages to the minimum rates allowed under the wage agreements. Substantial progress was made in the direction of more effi-

cient utilization, especially in low temperature carbonization. Important work was done also toward classifying and standardizing British coal. Coal production in 1928 was 237,774,000 tons, a decline from 251,232,336 tons in 1927.

The production of the more important industries of Great Britain is shown below:

INDUSTRIAL PRODUCTION

Product	1925	1926	1927
Coal 1000 long tons..	248,176	126,279	255,417
Iron ore	10,146	4,096	.....
Salt	1,926	1,722	.....
China clay, etc.	1,114	1,058	997 ^a
Oil shale	2,465	1,960	.....
Limestone	13,126	11,077	.....
Sandstone	3,041	3,124	.....
Slate	306	300	.....
Igneous stone	8,730	8,692	.....
Pig iron	6,262	2,442	7,850
Steel ingots and castings .	7,385	3,560	9,200
Cotton deliveries to spin- ners ^b 1000 bales..	3,328	3,082	3,144
Boots and shoes .....	.....	118,535	114,601 114,900
Spirits, alcoholic .....	.....	88,028	37,759 27,323
..... 1000 proof gallons..	26,735	26,766	25,100
Beer .....	.....	.....	.....
Shipbuilding, vessels launched 1000 gross tons..	1,085	640	1,226

^a China clay only; ^b years ended July 31.

FISHERIES. The accompanying table shows the quantity and value of the British catch of fish in 1926 and 1927:

	1926 Tons	1927 ^a Tons
England and Wales	625,207	654,300
Scotland	323,041	345,908
Great Britain (excluding shellfish)	948,248	1,000,208
	£	£
England and Wales	12,700,657	12,769,516
Scotland	4,349,205	4,368,321
Great Britain (excluding shellfish)	17,049,862	17,137,837
Value of shellfish	599,817	522,705

^a Provisional figures.

COMMERCE. The achievement of a substantial recovery in the export trade of the United Kingdom in 1927 was notable in view of the severe handicap with which the year began as a result of the seven months' coal stoppage. When the industrial upheaval and unsettled conditions of 1926 are remembered, it is not surprising that the 1927 exports of British produce and manufactures exceeded those of 1926 by some £56,000,000, or 8.5 per cent. It is especially noteworthy that in quantity British exports for 1927 were practically equal to those of the more normal year, 1925, though lower price levels caused a relative decline of 8.3 per cent in value.

The total adverse visible merchandise balance for 1927 was £387,219,000—a marked drop from the huge total of £462,819,000 for 1926, the year of the coal stoppage and general strike, and even a more substantial decline from the adverse balance of £393,298,000 in 1925. Board of Trade figures showing values of overseas merchandise trade for the three calendar years, 1925-1927, are as follows:

UNITED KINGDOM FOREIGN TRADE VALUES

Year	Imports (c. i. f. value)	Exports (f. o. b. value)	Re-exports (f. o. b. value)	Net excess of imports
1925	£1,320,715,190	£773,880,702	£154,036,799	£293,297,689
1926	1,241,361,277	653,046,909	125,494,968	£462,819,400
1927	1,219,387,424	709,105,402	123,062,727	£87,219,295

The value figures show declines from 1925 in imports of food, drink, and tobacco; raw materials; and parcel-post goods; but increases in

since 1925. Compared with the abnormal year, 1926, all classes of exports show substantial increases.

C. I. F. VALUE OF IMPORTS INTO THE UNITED KINGDOM BY CLASSES

<i>Class</i>	1925	1926	1927
Food, drink, and tobacco	£570,101,018	£529,788,541	£539,339,083
Raw materials and articles mainly unmanufactured ...	424,783,148	392,183,456	351,961,728
Articles wholly or mainly manufactured	319,631,089	314,682,305	322,407,885
Animals, not for food	2,306,662	2,154,784	2,673,916
Parcel post (nondutiable articles)	3,893,273	2,552,191	3,005,312

PRINCIPAL SOURCES OF IMPORTS INTO THE UNITED KINGDOM

<i>Country of origin</i>	1925	<i>Per cent of total</i>	1926	<i>Per cent of total</i>	1927	<i>Per cent of total</i>
	<i>Value</i>		<i>Value</i>		<i>Value</i>	
United States	£245,277,995	18.6	£228,890,791	18.4	£200,353,379	16.4
Argentina	68,856,044	5.2	67,505,081	5.4	76,584,488	6.3
British India	80,099,083	6.1	57,638,068	4.6	65,912,962	5.4
France	65,042,372	4.9	59,176,536	4.8	63,477,218	5.2
Germany	48,403,494	3.7	72,609,965	5.9	59,824,609	4.9
Canada	70,585,661	5.4	64,048,440	5.2	55,136,615	4.5
Australia	72,637,109	5.6	61,080,461	4.9	52,808,616	4.3
Denmark	49,053,974	3.7	47,954,048	3.9	49,977,233	4.1
New Zealand	51,331,282	3.9	46,813,322	3.8	46,517,638	3.8
Belgium	35,556,819	2.7	44,853,301	3.6	44,482,989	3.7
The Netherlands	45,597,995	3.5	50,299,477	4.1	44,272,143	3.6
Irish Free State	43,381,726	3.3	40,865,657	3.3	43,272,143	3.6
Sweden	21,326,977	1.6	21,425,722	1.7	25,264,092	2.1
Egypt	34,201,873	2.6	25,100,537	2.0	23,685,309	1.9
Union of South Africa	25,122,993	1.9	18,907,958	1.5	21,418,184	1.8
Russia	25,322,038	1.9	24,130,217	1.9	21,056,722	1.7

receipts of manufactured goods and in "animals not for food" classification.

Of the total 1927 imports, 16.4 per cent came from the United States as against 6.3 per cent from Argentina, the second most important source. The share of the United States was 2 per cent below the 1925 percentage in this trade, the smaller return for raw cotton being largely accountable for this relative decrease. The principal countries supplying the import requirements of the United Kingdom, with the valuation of each in comparison with the two previous years are given above.

Of the total imports, the percentage obtained from the British Empire was 32.5 in 1925, 30.3 in 1926, and 30.1 in 1927.

Exports of British goods to the United States aggregated £45,000,000, which was 6.4 per cent of the total export valuation. Although these figures represent slight actual and relative recessions from the two previous years, the United States continued to rank third among buyers of British products. The direction of this trade is indicated by the accompanying table, which gives the countries figuring most conspicuously as markets for British goods.

Other countries taking substantial values of British goods in 1927 were as follows: New Zealand (£19,607,000); Italy (£13,486,000); Denmark (£9,780,000); Sweden (£9,654,000); Switzerland (£7,645,000); Norway (£7,456,000); Poland (£5,316,000); Japan (£15,161,000);

F. O. B. VALUES OF EXPORTS OF UNITED KINGDOM

<i>Class</i>	1925	1926	1927
Food, drink, and tobacco	£54,986,296	£50,457,311	£52,280,207
Raw materials and articles mainly unmanufactured ...	84,350,637	47,162,351	76,355,792
Articles wholly or mainly manufactured	616,608,038	539,340,935	563,964,508
Animals, not for food	2,293,457	1,716,720	1,897,353
Parcel post	15,142,274	14,369,592	14,607,542

PRINCIPAL DESTINATIONS OF EXPORTS OF UNITED KINGDOM GOODS

<i>Country of destination</i>	1925	<i>Per cent of total</i>	1926	<i>Per cent of total</i>	1927	<i>Per cent of total</i>
	<i>Value</i>		<i>Value</i>		<i>Value</i>	
British India	£86,047,757	11.1	£81,755,046	12.5	£85,057,854	12.0
Australia	60,169,330	7.3	61,331,260	9.4	61,189,507	8.6
United States	52,074,185	6.7	49,115,767	7.5	45,481,905	6.4
Germany	44,226,072	5.7	26,351,802	4.0	41,824,520	5.9
Irish Free State	40,217,350	5.2	34,757,887	5.3	36,143,849	5.1
Union of South Africa	30,747,864	4.0	32,163,584	4.9	30,515,783	4.3
Canada	27,553,090	3.6	26,374,171	4.0	29,258,811	4.1
Argentina	29,145,326	3.8	23,074,409	3.5	26,993,373	3.8
France	31,026,406	4.0	20,384,170	3.1	23,686,414	3.3
The Netherlands	24,808,518	3.2	17,933,830	2.8	21,220,029	3.0

Exports of produce and manufactures of the United Kingdom in 1927 showed a decline from 1925 in all five classes, when values alone are considered. Price corrections would show a slight net increase of exports, as the percentage of decrease in each class about equals, or is somewhat less than, the percentage of fall in price

Straits Settlements (£11,406,000); China (£9,691,000); Hong Kong (£4,910,000); Ceylon (£5,876,000); Brazil (£14,391,000); Chile (£5,183,000); Egypt (£12,568,000); Nigeria (£8,381,000); and the Gold Coast (£5,137,000). The percentage of the total exports of United Kingdom goods that went to the British Empire was 43.3

in 1925, 48.5 in 1926, and 46 in 1927. The total value of exports of imported merchandise (re-exports) in 1927 was only about 80 per cent as great as that of 1925.

In two of the years 1925, 1926, and 1927, imports of bullion and specie have exceeded exports and have thus added to the total adverse visible balance of trade. Heavy bullion movements in 1925 were doubtless influenced by the return of sterling to par early in that year.

FINANCE. Government revenue for 1927-28 (April 1-March 31) was greater by £4,239,000 than expenditures, a budget surplus for the first time since 1924-25. Receipts exceeded the budget estimates by about 1 per cent and were $4\frac{1}{2}$ per cent larger than in the previous year, by reason of extra installments of the landlords' property tax and brewers' excise, the appropriation of £12,000,000 road-fund reserve to the general budget account, the death of a large number of wealthy persons increasing the inconsistent item of estate duties, and other causes. Expenditures were slightly less than in 1926-27 despite an increase in the debt sinking-fund allotment from £60,000,000 to £65,000,000. Interest charges of £313,816,000 were more than one-third of the governmental expenditures. The reduction of expenditures was effected principally in the civil departments.

The budget for 1928-29 presented to the House of Commons on Apr. 24, 1928, by the Chancellor of the Exchequer, contemplated drastic relief to productive industries through large-scale remittance of local taxes. The proposed aid was subject to the passage of local government and valuation ascertainment bills to be introduced in Parliament in the fall. The projected assist-

ance would grant total exemption from local taxes to all farm lands and farm buildings and exemption up to 75 per cent of their valuation to all other productive premises, except public utility companies. The scheme was estimated to cost the national treasury £29,000,000 yearly. The launching of the project was to be financed mainly by the application of the 1927-28 budget surplus and the estimated surplus for 1928-29, as well as the proceeds of a newly imposed gasoline tax.

Owing to its different form, the 1928-29 budget may not be readily compared with previous estimates. This year the Chancellor of the Exchequer omits from the general budget under revenues that part of the motor-vehicle tax which was to be expended on road work and also post-office receipts to an extent considered sufficient to defray the expenses of the Post Office Department services. The general expenditures account accordingly omits estimates for the road fund and for the post office; also, it does not include the usual sinking fund item, as this part of the national-debt services is to be provided by taking the existing reserve against currency note depreciation (£13,200,000), plus £51,000,000 from an accumulation on the fixed debt charge and £800,000 from the exchequer. With these amounts removed, the estimated revenue for 1928-29 is £756,083,000.

Expenditure against current revenue was estimated at £676,581,000, and with the sinking-fund provision of £65,000,000 added, the estimated total exchequer payments amount to £741,581,000, thus leaving a net estimated surplus of £14,502,000. This latter amount, added to the 1927-28 surplus of £4,239,000, gives a

PROPOSED BUDGET RECEIPTS AND EXPENDITURES OF THE BRITISH GOVERNMENT FOR THE
FINANCIAL YEAR ENDING MARCH 31, 1929, COMPARED WITH PAST TWO YEARS
[000 omitted from all items]

Item	1927	1928	1929
REVENUES			
Customs	£107,700	£112,120	£122,067
Excise	134,300	145,760	142,518
Motor-vehicle duties	20,100	24,100	4,400
Estate, etc., duties	66,000	67,800	72,000
Stamps	25,000	25,500	28,000
Land tax and house duty, and mineral-rights duty	1,000	800	850
Income tax	225,000	247,000	232,900
Supertax	64,500	62,000	60,000
Excess-profits duty, etc.	2,000	3,000	1,000
Corporation-profits tax	6,500	2,700	1,500
Postal, telegraph, and telephone services	59,400	62,000	8,186 ^a
Crown lands	950	1,050	1,000
Receipts from sundry loans, etc.	17,650	23,500	27,650
Miscellaneous ordinary receipts	18,600	30,500	13,550
Miscellaneous special receipts	26,000	27,000	40,362
Total	804,700	834,830	756,083
Surplus from 1927-28 .....	.....	.....	4,239
Budget account total for 1928-29 .....	.....	.....	760,322
National debt services:			
Interest, etc.	304,000	305,000	304,000
Sinking fund	50,000	65,000 ^(b)	(^b)
Road fund	19,500	19,500	(^a)
Payments to local taxation accounts, etc.	14,100	14,300	14,200
Payments to Northern Ireland Exchequer	5,200	5,400	5,600
Other consolidated-fund services	2,600	3,700	2,600
Army (including ordnance factories)	42,500	41,565	41,050
Navy	58,100	58,000	57,300
Air force	16,000	15,500	16,250
Civil services	234,257	235,725	223,804
Customs and excise, and inland revenue departments	11,784	12,007	11,777
Post office	54,600	57,643	(^a)
Total	812,641	833,390	676,581
Sinking fund .....	.....	.....	65,000 ^b
Surplus from 1927-28 .....	.....	.....	4,239
Estimated surplus from 1928-29 .....	.....	.....	14,502
Budget account total for 1928-29 .....	.....	.....	760,322

^a Net. See preceding paragraph; ^b see explanation above.

total of £18,741,000 available for current year budget contingencies and for the suspensory fund, into which the new gasoline revenue will go for application on local tax relief.

In the accompanying table the new estimates are set opposite those for the previous two fiscal years, but the different arrangement necessitates caution in any attempted comparison. Only a small fraction of the receipts from motor-vehicle duties will figure as a revenue item, but there is the compensating omission of the "road fund" on the expenditure side of the account. Presumably, there has been set up, separate from the general budget figures, a road-fund account into which will go motor-vehicles duties collected for the purpose. In the case of the Post Office Department services, only a credit item appears; total receipts and total expenditures, as heretofore shown, do not appear under this heading.

For the year ended Mar. 31, 1928, the external debt of Great Britain amounted to £1,095,230,000 and the internal debt to £6,432,340,000, making a total of £7,527,570,000 as compared with £7,554,618,000, at the end of the 1926-27 fiscal year. Thus the net figure of the dead-weight debt outstanding at the end of the 1927-28 fiscal year indicated a decline of some £27,000,000 during the year, the external debt having been reduced by £6,224,000 and the internal by £20,824,000. The total floating debt, at £689,000,000 on Mar. 31, 1928, marked the lowest point reached since the War.

SHIPPING. The British merchant marine on June 30, 1927, comprised 8216 vessels of 19,309,022 gross tons. During the previous year 76,440 vessels of 82,278,000 net registered tons entered the ports of Great Britain and 76,312 vessels of 82,608,000 tons cleared in the foreign trade. See **SHIP BUILDING** and **SHIPPING** for statistics concerning the vessels launched during the year in Great Britain.

STATISTICS OF RAILWAYS (GREAT BRITAIN ONLY)

	1925	1926	1927
Length of line . . . miles . .	20,391	20,396	20,400
Length of track . . . do . .	52,233	52,332	52,458
Locomotives . . . number . .	24,209	24,045	24,008
Passenger cars . . . do . .	50,823	51,210	51,400
Freight cars . . . do . .	721,359	720,860	718,238
Passengers carried . . .			
. . . millions . . .	1,743	1,541	1,650
Freight carried . . .			
. . . 1000 long tons . .	315,951	215,597	325,408
Ton-miles ^b . . . millions . .	18,332	14,042	18,847
Train-miles . thousands . .	141,076	112,894	144,115
Gross receipts ^c . £1000 . .	199,653	171,852	200,800
Passenger service . do .	94,079	85,121	89,500
Freight service . do .	103,676	85,044	109,600
Gross receipts, equivalent \$1000	964,104	884,893	976,089

^a Exclusive of livestock; ^b standard gauge only; ^c including miscellaneous receipts not shown separately.

RAILWAYS. Railway freight traffic continued to be somewhat disarranged in the early months of 1927, owing to the abnormal movement of coal imported on the previous year's contracts, as contrasted with the normal outward movement, but thereafter the service was able to show improvement. Unfavorable weather during the summer adversely affected both passenger and freight traffic, but probably the greatest single adverse factor was the competition of motor vehicles. Freight receipts were of course above those for the previous disturbed year, and compared favorably with 1925, but passenger receipts were below all other recent

years except 1926. Additional facilities for excursion trips and the modernization of equipment continued.

The railroads of Great Britain are divided into four systems, all privately owned, namely, the London, Midland & Scottish, the London & Northeastern, the Great Western, and the Southern. Statistics covering all four systems are given in the accompanying table.

Probably the outstanding feature of the history of railroads during the course of the year was the permission granted by Parliament in the autumn allowing the companies to operate on the highways of the country to offset the ever-increasing competition of motor vehicles. There was considerable objection to the measure, but it was passed by an extremely large majority. Apparently all the railway workers as well as the public in general were for the measure. In connection with the keen competition in England between the railways and the motor-transport agencies, a coöperation agreement was reached near the end of the year by the London, Midland & Scottish and the Great Western Railway companies, for a more united opposition to road competition. This working scheme was to be applied first to railways working in the west of England, where up until then the two companies, had overlapped each other in the area served by each respective railway. In many instances great losses had been occasioned through maintenance, in some cases requiring extra terminals for passengers and freight where one of the rail carriers had available station accommodation for the passenger trains of both companies, and where one line had also an adequate amount of siding and equipment to deal with all freight traffic previously handled separately. It was understood that three important stations on the London, Midland & Scottish Railway were to be closed as a result of the agreement.

During the year the railway labor unions agreed with the four railway companies to accept a wage reduction of 2½ per cent for all classes of employees. A like reduction was accepted by directors and chief officers of the companies. The reduction became effective Aug. 13, 1928, and will be in effect for a period of 12 months, with provision for termination by either side on three months' notice. The immediate result of the reduction will be an annual saving of £2,500,000 in labor cost to the companies. More than 650,000 employees of the four companies were affected.

ARMY AND NAVY. The military system of the United Kingdom provides for a regular and territorial army and a reserve. Troops in the army serve both at home and abroad. Territorial troops serve only at home in peace times. The regular army in 1927-28 totaled 210,436, of whom 60,223 were in India. The strength of the Territorial Army on Dec. 1, 1928, was 146,266. See **MILITARY PROGRESS**.

Class	Completed by end of		
	1925	1926	1927
Battleships and Battle Cruisers . .	22	23	20
Cruisers	50	49	50
Aircraft carriers and tenders	7	7	7
Flotilla leaders and destroyers . . .	207	174	174
Submarines	65	56	56

The accompanying table from the *Statesman's Year Book* for 1928 shows the number of classes of the more important units of the British fleet,

including the ships and vessels of the Dominions. See NAVAL PROGRESS.

GOVERNMENT. George V, born June 3, 1865, was the reigning monarch during 1928. He succeeded his father, Edward VII, on May 6, 1910. The cabinet during 1928 was as follows: Prime Minister, Treasury, and Leader of the House of Commons, Stanley Baldwin; Foreign Affairs, Sir J. Austen Chamberlain; Privy Seal and Leader of the House of Lords, Marquis of Salisbury; President of the Council, Earl of Balfour; Chancellor, Lord Hailsham; Chancellor of the Exchequer, Winston S. Churchill; Home Affairs, Sir William Joynson-Hicks; Colonies and Dominions, Leopold C. M. S. Amery; War, Sir L. Worthington-Evans; India, Earl of Birkenhead; Air, Sir Samuel Hoare; Admiralty, W. C. Bridgeman; President of the Board of Trade, Sir Philip Cunliffe-Lister; Health, Arthur N. Chamberlain; Agriculture and Fisheries, Lieut.-Col. Walter E. Guinness; Secretary for Scotland, Sir John Gilmour; Education, Lord Eustace Percy; Labor, Sir Arthur Ramsay-Steel-Maitland; Chancellor of Duchy of Lancaster, Lord Cushendun; First Commissioner of Works, Viscount Peel; Attorney-General, Sir Thomas W. H. Inskip; Pensions, George C. Tryon; Transport, Wilfrid W. Ashley; Solicitor-General, Sir Frank Boyd-Merriman; Postmaster-General, Sir William Mitchell-Thomson; Lord Advocate, William Watson; Solicitor-General for Scotland, A. M. MacRobert. For changes in the cabinet see paragraphs below under *History*.

HISTORY

SITUATION AT THE BEGINNING OF THE YEAR. The entire year for Great Britain was rather dull and did not come up to the expected hopes of industrial, commercial, and financial expansion which the leaders of all shades of opinion had wished. In the early months there was the so-called Mond conference between capital and labor, held with the idea of the two groups getting together when there were no industrial strifes and settling their disputes in an orderly and satisfactory manner. Although this conference met intermittently throughout the year, nothing of value was accomplished and as the year closed it appeared that the conference idea would be given up because of the vast gulf that separated the two groups. Parliament opened on February 7, and was addressed from the throne by the King in a very uninteresting and colorless speech. The only outstanding points of his speech were the promise of a reduction in local taxation and a promise that the suffrage bars would be let down to permit a wide extension of woman suffrage. The death of the Earl of Oxford and Asquith on February 15 caused a deep sense of loss throughout the entire country. Consult his biography.

Scandals of various kinds agitated England throughout the year, especially those dealing with speculation in francs by members of the Foreign Office and the disclosures of police corruption in the London district, as well as the disturbance of the "jazz band" incident aboard H.M.S. *Royal Oak* in the Mediterranean Sea. The franc scandal was settled by the expulsion of some under members from the Foreign Office and a delimiting of just how far a person may use his official position to advance his own fortunes. Lord Byng, in command of Scotland

Yard, promised a "clean up" of the conditions of vice and graft existing in that bureau, and the *Royal Oak* affair was settled after the position of the navy had been upheld by courts martial.

Probably the outstanding act of Parliament during the entire year was the passage of the bill increasing the number of voters in England by granting suffrage to all women over 21. This bill which passed its second reading in the House of Commons on March 29 and which was adopted by the House of Lords on May 22 granted the franchise to approximately 5,000,000 women and reduced the age requirement from 30 to 21 for the women. It was estimated that the women voters of England would now outnumber the male voters by about 2,000,000. In numbers alone, if for no other reason, the women were bound to play a tremendously greater part in the next general election. The only other legislation of any importance was that rejecting the Prayer Book Bill. It was felt in many quarters that this latter measure brought the disestablishment of the Anglican Church a step nearer consummation. See ENGLAND, CHURCH OF.

SITUATION AT THE CLOSE OF THE YEAR. Parliament reopened for its autumn session on November 6. In his address the King in touching on foreign affairs stated that his Government had been glad to accept the Kellogg pact (see KELLOGG TREATIES) and expressed a friendly and helpful interest in the future of China. In referring to domestic affairs he stated that every effort would be made at this session of Parliament to alleviate the economic and unemployment conditions of the country. He expected a great deal along these lines from the adoption of Mr. Churchill's budget for 1928-29. See above under *Finance*.

It should have been mentioned in passing that the resignation of the Earl of Birkenhead as Secretary of State for India was announced on October 7. He was succeeded by Viscount Peel, whose position as First Commissioner of Works was filled by the Marquis of Londonderry. Practically no measure of importance was passed during the remainder of the year, although the three parties, the Conservatives, Liberals, and Laborites made every attempt to mend their political fences in view of the general election coming in 1929. The Laborites, in particular, sought to lay at the doors of the Baldwin government the breaking down of the economic system of the country and the tremendous increase in unemployment.

The last six months of the year were shrouded in gloom and uncertainty because of the serious illness of King George. In the latter part of November he was stricken with a complication of pleurisy and congestion of the lungs and for the balance of the year seemed to hang between life and death. However, the reports given out in the last week of December seemed to indicate that he was on the road to recovery, although it would be a very long and slow process. The Prince of Wales, who was on a hunting and "good will" tour in Africa was called to his father's bedside and was virtually acting King in the last two weeks of the year, although the formality of creating a Council of State, including the Queen, the Prince of Wales, the Duke of York, the Archbishop of Canterbury, the Prime Minister, and the Lord Chan-

cellor was adopted. The King's serious illness was a climax to a very dull year in British history at home and abroad.

GREECE. A republic in southeastern Europe, comprising the lower Balkan peninsula and many islands in the Aegean Sea; formerly a constitutional monarchy. King George II was forced to leave Greece Dec. 19, 1922 and the Republic was established Apr. 13, 1924, as the result of a plebiscite. In continental Greece are included Macedonia, Western Thrace, and Epirus; the chief island possession is Crete. Capital, Athens.

AREA AND POPULATION. The total area of Greece before the Balkan wars of 1912-13 was 25,223 square miles; as a result of these wars Greece added 20,730 square miles to her territory. According to the Treaty of Lausanne (1923), Greece obtained a further area of 3182 square miles; the total area of the present Greek Republic is 49,912 square miles. According to the census of 1920 and that of the refugees made in April, 1923, the population was 5,973,721. It was estimated that between August, 1922, and January, 1925, 1,350,000 Greek refugees returned to Greece from Asia Minor. Preliminary results announced for the census taken in 1928 showed a population of 6,198,669.

During 1927 satisfactory progress was made by refugees already settled during the year, as indicated by the increase in payments toward amortization of the refugee loan of 1924. Since the proceeds of this loan, however, have been practically exhausted and there still remains a large part of the refugee programme to be completed, the League of Nations approved the application for additional funds to carry on the settlement work. Of a total of approximately 1,400,000 refugees, it was estimated that over 800,000 had been settled up to the spring of 1928.

EDUCATION. Education is compulsory for all children, between the ages of 7 and 12, although the law is not very well enforced in the country districts. According to the latest statistics there were 7200 primary schools with 13,996 teachers and 499,084 pupils; 650 high schools with 2523 teachers and 86,500 pupils; 24 commercial schools, with 183 teachers and 3607 students. There are two universities at Athens; the National University and the Capodistria University, with 61 professors and 9799 students. There are also various technical and agricultural schools.

PRODUCTION. Agricultural production in Greece was generally satisfactory in 1927. Tobacco, the most important export item, was estimated at 120,358,300 pounds as compared with 120,172,000 pounds in 1926. Preliminary returns for currants, however, indicated a decrease from 1926, resulting from unfavorable weather conditions; the 1927 crop was estimated at 283,000,000 pounds, as compared with 315,000,000 pounds in the previous year. Larger returns for cereals were anticipated, following the increase in sown area and the more liberal use of fertilizer; the total yield was placed at 927,700 metric tons as against a revised figure of 649,000 metric tons in the previous year. The fig crop was expected to be slightly larger than in 1926, but a decrease was indicated for olives in consequence of the unfavorable weather.

Preliminary data on industrial production for 1927, excluding wine and olive oil, showed an increase of 20 per cent in drachma value over

the previous year, the figures being 6,115,620,000 drachmas for 1927 and 5,096,350,000 for 1926. The principal increases were recorded in the textile, chemical, and building material industries. In 1926 the value of olive-oil and wine production was 2,491,500,000 drachmas, as compared with 1,696,000,000 drachmas in 1925. Industry in general benefited from the improved economic condition of the country, but a shortage of ready cash continued to retard its development.

COMMERCE. The foreign commerce of Greece in 1927, reflecting the increased activity during the year, was marked by a large increase in imports and a small expansion in exports over 1926. The total turnover was 26.7 per cent greater in dollar value and 20.8 per cent in drachma value than in the previous year, while the adverse trade balance increased considerably. The difference in dollar and drachma valuations is largely accounted for by the higher exchange value of the drachma, which averaged \$0.132 during 1927 as compared with \$0.0126 in 1926. The drachma has since been stabilized at \$0.0129.

Imports were 20 per cent larger in drachma value and 32 per cent in dollar value than in 1926, while the volume showed an increase of 22 per cent. The gain in imports was evenly distributed—textiles, wheat, motor vehicles, sheet iron, livestock, and coal showing the principal increases. The only decrease of importance was in wheat flour, as a result of the heavy import duty placed on this commodity in the spring of 1927. This loss, however, was offset by larger purchases of wheat.

Exports during 1927 exceeded those of 1926 by 23.8 per cent in drachma value and 29.7 per cent in dollar value, while the volume increased 16 per cent. The major items with few exceptions, showed increases in value, with smaller volumes in many instances. Greek imports from the United States rose from \$20,427,300 in 1926 to \$26,492,300 in 1927. Wheat, motor cars, ginned cotton, rice, sheet iron, and leather registered the principal increases, while wheat flour, oleo oil, sugar, textiles, and agricultural machinery recorded declines. Exports from Greece to the United States totaled \$17,319,000 as against \$16,176,300 in 1926. Principal exports to the United States include tobacco, currants, figs, chrome ore, emery, olives, and olive oil.

FINANCE. From a financial point of view the year 1927 was an important one. The debts to Great Britain and the United States were funded, negotiations were carried on with respect to the claims of France, and the approval of the League of Nations was obtained for the flotation abroad of a loan to balance the budget, stabilize drachma exchange, and carry on the refugee work. This series of developments marked the formulation of a definite financial programme and had a stimulating effect on business in general. The loan to be granted under the auspices of the League of Nations was not to exceed £9,000,000 net, including the United States' share; but upon settlement of the debt to the United States, and the simultaneous agreement for a loan of \$12,167,000, this latter amount was to be deducted from the total amount authorized by the League. The loan was to be secured by the revenues under the control of the International Financial Commission, in so far as the yield of these revenues was not required for the service of

FOREIGN TRADE OF GREECE IN 1926 AND 1927

Commodity	Metric tons		Drachmas ¹		Metric tons		Drachmas ¹	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
IMPORTS								
Textile materials	18,461	1,583,552	25,221	2,227,784				
Wheat	313,605	1,650,338	411,054	2,012,654				
Livestock	2 943,664	419,579	2 1,357,155	534,800				
Sugar	48,140	399,707	60,292	546,544				
Coal	551,071	416,372	713,892	480,933				
Wheat flour	148,495	912,648	66,752	431,527				
Construction lumber	{ 199,165 }	344,903	{ 211,484 }	411,148				
	{ 347,589 }		{ 369,186 }					
Machinery and parts	14,319	334,152	14,846	358,570				
Fish and caviar	22,496	291,529	24,284	308,692				
Benzine	23,465	187,035	28,519	266,143				
Kerosene	21,789	122,662	24,618	253,186				
Rice	22,547	179,542	25,139	208,915				
Coffee	4,688	196,033	5,223	196,253				
Raw hides	3,980	114,575	5,353	155,244				
Beans	21,786	126,159	25,900	151,229				
Motor cars	{ 872 }	46,071	{ 2,624 }	150,813				
	{ 4,744 }		{ 4,271 }					
Prepared hides	345	91,503	571	126,703				
Naphtha	37,419	85,452	51,212	115,123				
Sheet iron	12,887	75,945	22,665	115,072				
Cheese	694	19,757	4,416	111,224				
Corn	19,739	73,167	31,386	109,309				
Margarine, oleomargarine, and edible fats	4,402	79,890	4,491	90,038				
Barley	6,890	23,887	20,733	80,223				
Milk, condensed, malted, etc	2,865	51,877	3,262	66,263				
Eggs	2,462	45,425	3,087	63,912				
All other commodities	367,691	2,096,682	487,346	2,875,981				
Total	1,870,230	10,004,939	2,275,213	12,601,948				
Equivalent value in dollars		126,062,000		166,346,000				
EXPORTS								
Tobacco leaf	54,682	3,094,980	52,722	3,417,640				
Currants and sultanas	94,521	845,891	95,530	921,484				
Wine	104,305	431,015	138,814	527,407				
Olive oil	3,014	51,638	8,147	132,466				
Raw hides	3,232	116,256	2,830	139,597				
Olives	12,973	94,348	10,872	105,013				
Figs	15,315	99,167	10,367	62,348				
Argentiferous lead ore	5,732	59,659	6,042	47,219				
Colophony	8,700	37,334	9,262	41,358				
Turpentine oil	2,273	40,786	2,060	33,745				
Locust beans	14,861	16,930	20,743	30,121				
Silk	54,151	32,768	57,320	29,324				
Emery	12,942	27,021	13,116	26,071				
Citrus fruits	2,504	14,802	3,211	22,061				
Almonds	664	18,378	929	19,980				
Soap	3,398	32,917	1,664	18,829				
Chrome ore	19,770	15,899	16,010	13,885				
Brandy	898	12,735	408	13,522				
Cocoons	327	44,881	151	12,506				
Valonia	5,871	10,024	1,482	3,945				
Olive-kernel oil	1,401	14,112	1,101	3,230				
All others	113,501	318,110	179,680	365,710				
Total	534,035	5,429,751	632,461	6,037,411				
Equivalent value in dollars		68,415,000		79,694,000				

¹ Drachma, at average rate of exchange, equalled \$0.0126 in 1926 and \$0.0132 in 1927.

² Head.

³ Cubic meters.

⁴ Pieces.

loans having a prior charge. Under the terms of this loan, a number of reforms in the administration of public finances in Greece were to be instituted. These included the creation of a new bank of issue independent of the National Bank, the establishment of a mortgage bank, and in general the relieving of the National Bank of certain functions which now hinder its ordinary commercial work. By this process of decentralization it was expected that the newly created institutions will be placed in a position to cope effectively with the various problems connected with financial reconstruction.

In line with the policy of financial reconstruction, £3,000,000 of the League of Nations loan was to be used for attaining budget equilibrium and settling deficits accumulated from previous years. Under the proposed plan the Greek Government undertook to keep the budget within a limit of about 9,000,000,000 drachmas until the end

of the financial year 1929-30, and to maintain a balanced budget after that time. Exception was made, however, for capital expenditures for revenue-producing purposes, which may be provided from other sources than for the current budgetary expenditures. The budget draft for the entire fiscal year 1927-28, as submitted to Parliament by the ministry of finance, proposed revenues of 8,829,532,000 drachmas and expenditures of 8,878,332,000 drachmas, indicating a deficit of 49,000,000 drachmas.

On December 3, 1928, the U. S. *Commerce Reports* stated that the public debt of Greece was shown for the first time in terms of paper drachmas. The debt had been computed on the basis of 375 paper drachmas to the pound sterling (or 77 to the dollar), at which rate the drachma was stabilized. According to this statement, the public debt as of June 30, 1928, totaled 36,886,238,419 drachmas (about \$479,000,000), distrib-

uted as follows: Loans in gold, 25,883,461,594 drachmas; loans in banknotes, 4,480,482,808; floating debt, 4,130,375,158; and railroad debt, 2,391,918,859 drachmas. The debt per capita, on the basis of the census of May 15, 1928, which placed the population at 6,198,670, was therefore 595 drachmas, or approximately \$76.75. The service on this debt during the fiscal year ended Mar. 31, 1929, was estimated at 3,132,541,867 drachmas (\$40,400,000). By Nov. 30, 1928, the debt had been reduced to 36,654,874,000 drachmas.

COMMUNICATIONS. Of the nine systems which comprise the entire Greek railway mileage of 2846 kilometers, the state railways operate 1425 kilometers. During 1927 operating revenues of the state railways amounted to 309,401,242 drachmas, and other revenues to 3,391,807; operating expenses reached 317,982,807 drachmas, and other expenses 14,333,226, thus there was left a deficit of 19,522,349 drachmas. The rolling stock in operation consisted of 190 locomotives, 4085 freight cars, and 238 passenger cars. During the year, 50 locomotives, 9 freight cars, and 30 passenger cars were purchased. All equipment is in good condition. The Piræus-Athens-Peloponnesus Ry. operates 918 kilometers of track, of which 750 kilometers are main line, 95 kilometers branches, and 73 kilometers sidings. Operating revenues during 1927 amounted to 170,682,974 drachmas, and operating expenses were 153,409,992 drachmas. The rolling stock in operation at the close of the year comprised 90 locomotives, 881 freight cars, and 309 passenger cars. Although no new equipment was purchased during the year, it was all in good condition. At the close of 1927 the Thessaly railways were operating 241 kilometers of track, of which 204 kilometers were main line, 29 kilometers branches, and 8 kilometers, sidings. Operating revenues amounted to 32,913,180 drachmas, and other revenues to 2,360,233 drachmas; operating expenses reached 28,880,383 drachmas, and other expenses 3,654,039 drachmas. Rolling stock in operation consisted of 18 locomotives, 334 freight cars, and 65 passenger cars. The equipment was in fairly good condition.

The general depression of world shipping in 1927 had little effect on Greek lines, which profited from the difficulties arising between Soviet Russia and Great Britain with respect to traffic in the Black Sea. Most of this traffic, formerly handled by British ships, was diverted to Greek steamers. The Greek merchant marine on Dec. 31, 1927, totaled 501 steamers of 1,052,446 gross tons, as against 472 of 929,619 tons at the end of 1926.

For Army and Navy, see MILITARY PROGRESS and NAVAL PROGRESS.

GOVERNMENT. By a plebiscite on Apr. 13, 1924, the Republic of Greece was established. A new constitution was published on Sept. 22, 1926. It was revised by the chamber elected on Nov. 7, 1926. The new constitution was published on June 3, 1927. It provides, among other things, that a second house (senate) consisting of 120 members shall be established, that Parliament shall be elected by direct, universal, and secret voting and that the senate shall be elected partly by the people, partly by the Parliament and Senate in a common meeting, and partly by the corporations of the different professions. President in 1928, Admiral Konduriotis; the cabinet as constituted on Feb. 8, 1928: Premier, A.

Ziamis; Foreign Affairs, A. Michalacopoulos; War, General Mazarakis; Marine, J. Merlopoulos; Interior, A. Maris; National Economy, S. Velentsas; Agriculture, G. Exindaris; Social Insurance, A. Kyrkos; Justice, V. Tourkovassilis; Finance, G. Kaphandaris; Communications, Gen. J. Metaxas; Education, D. Nicoloudis.

HISTORY. The outstanding event in the history of Greece during the year was the return to power of Venizelos. He had been in virtual retirement for a period of six years and his return to public life was a surprise to his friends as well as to most of the governments of western Europe. His return was preceded by an announcement on his part that he was going to reassume the leadership of the Liberal party and save Greece from what appeared to be certain economic ruin. In many quarters in Greece his reappearance was not particularly pleasing, because, in a sense, he was the stormy petrel of Greek politics and had been the cause of the rise of many factions in Athens. The effect on the Zaimis government was almost immediately felt. Several members of the cabinet resigned and although Premier Zaimis replaced them, it was felt that his days as head of the Government were numbered.

Toward the end of June, Venizelos bitterly attacked the financial policies of the Zaimis government and was responsible for the withdrawal of support from the cabinet of the members of the Liberty party. This was merely the beginning of his return to power, inasmuch as on July 3 he was requested by President Konduriotis to form a government. This he promptly did and in his cabinet he included practically all the real leaders of the Liberal party, who were bitterly opposed to the monarchist group which had played a prominent part in Greek politics in the first half of the year. Evidently knowing that he would not get very far with the existing Parliament, Venizelos determined to dissolve that group and order new elections. This was done on July 9 and the new elections ordered for August 19. By a dictatorial stroke, Venizelos compelled the president to issue a decree changing the method of election from proportional representation to that of the district method. Although this was obviously unconstitutional and against the wishes of the opposition parties, the president was moved to accede to the venerable leader of the Liberal forces on his threat to resign and take his cabinet with him.

The result of the elections, although fore-ordained, was an unexpected landslide for Venizelos and the Liberal party, which favored the retention of the Republic. Out of the 250 seats contested, 228 were won by Venizelists. One the first phases that the new "strong man" of Greece dealt with was the question of foreign policy. This activity immediately bore fruit. A pact of friendship and arbitration was signed with Italy; a visit was made to Paris; negotiations with Jugo-Slavia concerning the establishment of a free zone in the harbor of Saloniki were undertaken; and Turkey was approached on the proposition of settling once and for all the refugee problem. Despite what one may think of the manner and method of the return of Venizelos to power, the fact was undeniable that the close of the year saw Greece in a stronger position from the point of view of interna-

tional relations than she had been at any time since the close of the World War.

GREEK ARCHÆOLOGY. See **ARCHÆOLOGY**.

GREEK STUDIES. See **PHILOLOGY, CLASSICAL**.

GREENLAND. The largest island in the world next to Australia; the only colonial possession of Denmark. The area is variously estimated at from 826,000 to 849,000 square miles. The settled portion, the only part included in Denmark's colony, has an area of 46,740 square miles, with a population, according to the census of 1921, of 14,355, of whom 274 were Danes. The largest settlement is Sydproven, with a population of 901, and the smallest, Skansen, with a population of 49. The interior remains unknown in detail, but the main geographical features are understood. Nearly the entire country consists of a plateau from 2000 to 3000 meters above the level of the sea, which means that it is covered by a thick, permanent coat of snow and ice, only about one-twenty-fifth of the surface being free from it and suitable for cultivation. Most of the inhabitants are located on the coast or on adjacent islands. The trade with Denmark in 1925 consisted of 3,271,000 kroner of imports and 7,192,000 kroner of exports. The trade, chiefly in seals, sealskins, fox skins, and oil is a monopoly of the Danish Government. At the head of the government is a director who resides in Copenhagen. See **POLAR RESEARCH**.

GRENADA, gre-nî'dà. An insular possession of Great Britain in the Windward group of the West Indies. Area, 133 square miles; population at the census of 1921, 66,302; estimated in December, 1926, 71,621. Grenada includes half of the Grenadine Islands, the other half being administered from St. Vincent. The capital is St. George with a population of about 5000. In 1926 the movement of population was: Births, 2402; deaths, 1460. In 1926 there were 58 government and government-aided schools for elementary education with 11,731 pupils and one secondary school. The chief products which are also the chief exports are cacao, spices, lime juice, cotton, and cotton seed. The production of sugar was rapidly increasing; in 1926, the local production of rum was 45,096 proof gallons. In the same year the revenue was £148,447 and the expenditure, £119,000. The exports were £447,401 and the imports, £386,483. The total shipping entered in 1926 was 453,802 tons, nearly all British. The colony is under the Governor of the Windward group, but has its own institutions. Governor and Commander-in-Chief of the Windward Islands, including Grenada in 1928, Sir Frederick Seton James; Colonial Secretary for Grenada, H. Ferguson.

GREVILLE, LEOPOLD GUY FRANCIS MAYNARD. See **WARWICK, EARL OF**.

GRIFFIS, THE REV. DR. WILLIAM ELLIOT. American clergyman, educator, historian, and lecturer on Japan, died at Winter Park, Fla., February 5. He was born at Philadelphia, Sept. 17, 1843. He served with the Forty-fourth Pennsylvania Regiment in the Civil War, and then entered Rutgers College, where he was graduated in 1869. After one year of study at the Dutch Reformed Theological Seminary at New Brunswick, N. J., he accepted an appointment to organize schools, on the American model, in Japan, and was the first American teacher in regions beyond the open ports. On the fall of the

feudal system and the unification of the Empire, he was appointed professor of the physical sciences in the Imperial University of Tokyo. He prepared the *New Japan Series* of reading and spelling books and primers for Japanese students in the English language, and contributed to the Japanese press and to newspapers and magazines in the United States numerous papers of importance on Japanese affairs. In 1874 he returned to New York, where he finished his theological studies at the Union Theological Seminary, and in 1877 was made pastor of the First Reformed Church at Schenectady, N. Y.; in 1886, of the Shawmut Congregational Church, Boston, Mass.; and in 1893 of the Congregational Church, Ithaca, N. Y. After 1903 he was chiefly engaged in writing and lecturing. He made a lifework of the fostering of friendly relations between the United States and Japan. Shortly before his death he returned from a visit to Japan, where he was received by the Emperor and was decorated for the third time with the Order of the Rising Sun. He received the degree of D.D. from Union College in 1884 and that of L.H.D. from Rutgers College in 1899. Dr. Griffis left a long list of books dealing with Japan and other subjects; among them were *The Mikado's Empire* (1876); *Corea, the Hermit Nation* (1882); *Sir William Johnson and the Six Nations* (1891); *Japan—Its History, Folklore, and Art* (1892); *Brave Little Holland and What She taught Us* (1894); *The Religions of Japan* (1895); *The Pilgrims in Their Three Homes—England, Holland, and America* (1898); *China's Story in Myth, Legend, Art, and Annals* (1910); *The House We Live In—Architect and Tenant* (1914); *Bonnie Scotland and What We Owe Her* (1916); *Young People's History of the Pilgrims* (1920); *Was Brant at Wyoming?* (1921); *The Story of the Walloons* (1924); *An American in the New Italy* (1925), and a series of books on the fairy tales of various nations. He edited Sawyer's *History of the Pilgrims and Puritans* (1922), and Scheffer's *History of the Free Churchmen in Holland* (1922).

GROMER, grô'mër, SAMUEL DAVID. American educator and former president of the Executive Council of Porto Rico, died August 26, at Kansas City. He was born at McFall, Mo., Sept. 8, 1865, and was graduated from the University of Missouri in 1889. He taught history and political science and economics at the Stanberry normal school in Missouri from 1891 until 1904, carrying on post-graduate studies at various times at Chicago, Harvard, and Columbia. He served as commissioner of schools in Gentry County, Missouri, from 1893 until 1897. He taught history at the College of the City of New York in 1906, and at the University of Missouri in 1906 and 1907, being a member of the Republican State Committee of Missouri from 1903 until 1907. On July 1, 1907, he was appointed treasurer and member of the Executive Council of Porto Rico, serving as president of the Porto Rican Senate from 1910 until 1912. He was also chairman of the finance committee and of the insular board of agriculture. He was acting president of the board of trustees of the University of Porto Rico, from which institution he received the degree of LL.D. in 1913. After his return to the United States in 1913 he taught rural economics at the University of Missouri, and in 1926 he became professor of agricultural economics at

that institution. He wrote "The Farmer and His Money," chap. 3, in the *Encyclopædia of Farm Knowledge* (1918).

GUADELOUPE, ga'dā-lōop'. A French insular possession in the Lesser Antilles in the West Indies, consisting of two islands separated by a narrow channel, the one on the west being Guadeloupe proper or Basse-Terre, and the one on the east, Grand-Terre. Combined area, 532 square miles; total area, including five small dependent islands, 688 square miles; population in 1926, 243,243. Basse-Terre is the capital, with a population of 8379; chief town, Pointe-à-Pitre, with 26,455 inhabitants.

There were 113 public and private elementary schools in 1926-27 with 364 teachers and 18,058 pupils. For higher education there was one lycée with 464 pupils and a secondary course for girls at Pointe-à-Pitre with 322 pupils. The chief products for exports are cacao, coffee, sugar, and rum. For local consumption, bananas, sweet potatoes, maize, tobacco, manioc, and various vegetables are produced. In 1926 the imports were 144,849,469 francs and the exports, 167,683,138 francs. Revenue and expenditure for 1927 balanced at 29,018,596 francs; the public debt on Dec. 31, 1926, was 499,078 francs. There is communication with France by means of two steamship companies, and there is a wireless station at Destrellan. At the head of the Government are a governor and an elected council and the colony sends to the French Parliament at Paris one senator and two deputies.

The tropical hurricane which swept over the West Indies on Sept. 12, 1928, was the worst in the history of the islands. The storm burst upon Pointe-à-Pitre with unprecedented suddenness and the wind reached terrific velocity within a few minutes. Houses were wrecked, trees uprooted, sailing craft sunk or demolished, electric, telephone, and telegraph wires carried away, and the streets filled with debris. Nine hundred persons were known to have been killed, thousands injured, and practically the entire population was without shelter. The storm reduced the sugar-cane crop of Guadeloupe approximately 50 per cent below normal (which would be 30,000 to 35,000 long tons) and destroyed the banana and coffee crops, shade trees falling upon the coffee bushes, causing considerable damage. Fifty per cent of the distilleries were wiped out and others damaged. All sugar mills, except one, sustained severe damage to superstructures and machinery and all managers' houses, staff quarters, and laborers' huts were destroyed. A moratorium was declared. The islands' economic future received a serious setback and total damages were estimated between 300,000,000 and 500,000,000 francs.

GUAM, gwām. An insular possession of the United States, situated at the southern end of the Marianne or Marianna Islands, of which it is the largest and most populous, in the Pacific Ocean at a distance of about 1500 miles from Manila and 5053 from San Francisco. Area, 210 square miles; population, exclusive of the military and naval establishments, 17,018, on June 30, 1927, of whom 15,944 were classed as natives. Capital, Agaña, with about 8500 inhabitants. In 1928, the school registration was 3272 pupils. Spanish and English are spoken in addition to the native Chamorro. The products

of the island include cacao, coffee, copra, corn, rice, sugar, sweet potatoes, and timber. The exports in 1927 amounted to \$88,367 and the imports to \$415,936. The island constitutes an American naval station, of which the governor, appointed by the President, is commander of the naval station and military governor of the island. He is virtually the entire government. Governor in 1928, Capt. L. S. Shapley, U.S.N. (appointed Nov. 21, 1925).

GUATEMALA, gwā'tā-mälā. A republic of Central America lying between the Caribbean Sea and the Pacific Ocean, and south and south-east of Mexico. Capital, Guatemala City.

AREA AND POPULATION. The area is estimated at 48,290 square miles, but the limits have been uncertain on account of boundary disputes and the area has been figured as low as 42,353 square miles; population, according to the census of 1920, 2,004,900; estimated in 1927, 2,454,000. The populations of the chief cities were: Guatemala City, 115,928; Totonicapán, 30,888; Cobán, 26,774; Chiquimula, 25,191; Escuintla, 20,574; and Quezaltenango, 30,125.

EDUCATION. It was stated by President Chacón in his annual message to Congress delivered on Mar. 1, 1928, that the total enrollment in the schools of Guatemala during the year 1927 was 113,308 and the average attendance 105,993, a figure considerably larger than in former years. Schools numbered 3297, of which 2736 were national primary schools and 506 private institutions of learning. The school personnel numbered 3430 teachers. According to the report of the Minister of Public education, in 1928 there were 50 schools above the primary grade with an enrollment of 3278 and an average attendance of 2775. The various schools of the University had an enrollment of 645.

PRODUCTION. Agriculture is the principal source of wealth in Guatemala. The economic well-being of the country is directly and almost wholly dependent upon its coffee, which, because of its mildness and high quality, has an enviable reputation and commands generally high prices. The comparatively limited annual production assures a steady market and any increase in the world's demand for mild coffee results immediately in higher prices but not necessarily in increased production which is relatively inelastic. The average export from 1921 to 1927 was 960,000 quintals. The 1926-27 crop, which amounted to 88,184,000 pounds, was one of the largest ever produced and brought exceptionally high prices. The bulk of the 1927-28 crop was also exported in 1927, thus accounting for the record exports. Production in 1927-28 was estimated at about 82,000,000 pounds. Another important crop is sugar. Sugar production was 33,000 tons in 1926-27 and was estimated at 30,500 tons for 1927-28. Other crops are rice, wheat, corn, and potatoes. There are about 1,300,000 acres of forests. Mahogany and dyewoods are produced to some extent. In 1926 there were 260,300 cattle, 51,400 swine, 98,000 sheep, 16,500 goats, and 54,700 horses. Mica and gold are the only minerals produced commercially in the country. Aside from coffee-cleaning plants and sugar mills, factories are small and manufacture cigars and cigarettes, cotton cloth and hosiery, soap, candles, shoes, furniture, and glass bottles; there are also distilleries and bottling works, planing mills,

machine shops, tanneries, and ice and electric plants.

COMMERCE. The total foreign trade of Guatemala for 1927 was valued at 58,947,311 quetzales (1 quetzal equals \$1), exports amounting to 33,915,225 quetzales, and imports to 25,032,086 quetzales, thus producing a favorable trade balance of 8,883,139 quetzales. The following figures will give some idea of the great development of commerce during the years 1921-1927:

Year	Exports Quetzales	Imports Quetzales
1921.....	12,130,890.00	13,616,438.00
1922.....	11,977,039.00	10,751,659.00
1923.....	14,743,323.00	13,763,497.00
1924.....	24,491,535.00	18,271,257.00
1925.....	29,661,958.00	23,393,874.00
1926.....	28,978,087.00	26,601,588.00
1927.....	33,915,225.00	25,032,086.43

In 1927 coffee shipments amounted to 112,700,000 pounds, valued at 28,568,289 quetzales, or 84.2 per cent of the total exports, an increase of about 4 per cent over 1926. Banana exports were second in importance, 6,021,978 bunches, valued at 3,010,989 quetzales, having been shipped. Of the total imports, 13,968,000 quetzales' worth, or about 56 per cent, were supplied by the United States, 14.1 per cent by Germany, 11.8 per cent by Great Britain, and 2.8 per cent by France. According to data published in the annual report of the Ministry of the Treasury for 1928, an increase of 1,255,346 quetzales was shown in import duties collected during the fiscal year 1927-28 over the collections of the previous year. The respective figures were 5,344,654 quetzales for 1926-27 and 6,600,000 for 1927-28. The export duties during the same years were 2,237,469 quetzales for 1926-27 and 2,200,000 for 1927-28.

FINANCE. According to a message of the President to the National Assembly, ordinary revenues and expenditures during the fiscal year ending June 30, 1927, totaled \$12,411,000 and \$12,259,000, respectively. The purchase of the Government's share in the Banco Central de Guatemala amounting to \$500,000 was included in the expenditures. Import duties were by far the most important source of governmental income, totaling \$5,344,654. Ordinary revenues during the calendar year 1927 were stated to have amounted to \$13,115,000. In October, 1927, the Government effected a settlement of the deferred interest of the English debt; it agreed to issue bonds totaling £844,603. An agreement was also made to fund the debt owed to the International Railways of Central America by a bond issue of \$2,515,000. In July, 1927, an issue of bonds for the completion of the Los Altos Railway totaling \$1,950,000 was authorized. The amount of the public debt on Dec. 31, 1927, was approximately \$21,665,000, of which \$14,818,000 was foreign debt, floated partly in England and partly in the United States. Public revenues for the fiscal year 1928-29 were calculated "with severity" at 12,500,000 quetzales. Expenditures were fixed at the same amount, thus representing an increase of 1,500,000 quetzales as compared with the budget for 1927-28.

COMMUNICATIONS. The only railroad of importance in Guatemala is the International Railways of Central America, which in 1927 operated 638 miles of line, carried 2,747,000 passengers

and 879,000 tons of freight, and had gross receipts of \$7,012,190. In September, 1928, it was announced that the junction of the Salvadorean and Guatemalan branches of the International Railways of Central America was expected to be completed early in 1929. Rail was laid to a point approximately five kilometers beyond Metapan, and was ready for operation. Whether or not the through line to Puerto Barrios could be operated as soon as completed was a matter of conjecture. Even though constructed it would be necessary to allow the line to settle and, as the rainy season begins early in May, it was reasonable to suppose that the new line would present many difficulties such as slides and washouts. It was, therefore, possible that the new line might not be regularly operated until after the rainy season of 1929 (May-November). The importance of the junction of the Salvador and Guatemala lines can hardly be overestimated. The time to Europe and to Atlantic coast points of the United States will be shortened greatly for both freight and passengers, as compared with the time required over the present route via the Panama Canal. In 1926 the tonnage of vessels entered, 1,723,757 tons; of vessels cleared, 1,703,132 tons.

GOVERNMENT. The executive power is vested in a president elected for six years and legislative power in a National Assembly, consisting of representatives elected for four years, and a council of state of 13 members, part of whom are elected by the National Assembly and part appointed by the President. President in 1928, Lazaro Chacón. The National Assembly on Mar. 24, 1928 elected Gen. Mauro de León, First Designate, Rudolfo E. Sandoval, Second Designate, and Col. Baudilio Santos, Third Designate. The designates succeeded to the presidency in the order named, in case of a vacancy during the presidential term, holding office only until a new president can be elected in a special election.

For an account of the boundary dispute with Honduras, consult the historical paragraphs in the article on HONDURAS. In the fall, according to the press, the activities of the opposition groups in the country caused the virtual establishment of martial law for a period of five months by President Chacón.

GUERRERO, gá-rá-rò, MARIA (MARIA GUERRERO DE DIAZ DE MENDOZA). Spanish actress, died January 23. She was one of the foremost actresses of the Spanish-speaking world and appeared with success in the plays of Lope de Vega, Calderon, and others, in Latin America and the United States as well as in her own land. She made many tours in South America, Central America, and Cuba; her company was so successful in Buenos Aires, Argentina, that she built her own theatre there. She played in New York in 1926 and 1927. Her husband, the Duke of Balazoto, also appeared with success on the stage, in the company of his wife. She was called sometimes "the Sarah Bernhardt of Spain."

GUERRY, THE RIGHT REV. WILLIAM ALEXANDER. American clergyman, Protestant Episcopal bishop of South Carolina, died at Charleston, S. C., June 9, from a gunshot wound inflicted by an apparently demented clergyman, who then killed himself. Bishop Guerry was born in Clarendon County, South Carolina, July

7, 1861, and was educated at the Porter Military Academy, Charleston, S. C., and at the University of the South. He received his A.M. degree in 1884 and his B.D. in 1891. He became a deacon of the Protestant Episcopal church in 1889 and a priest in 1890, and held charges at Florence, Marion, and Darlington, S. C., 1888-93, before becoming chaplain and professor of homiletics at the University of the South. He was consecrated coadjutor bishop of South Carolina in 1907 and bishop in 1908. From 1917 to 1926 he was president of the Provincial Board of Social Service, Province IV. He was especially active in church work among the negroes. He published tracts on baptism and on marriage, reprinted from *The Living Church*.

GUGGENHEIM, JOHN SIMON, FELLOWSHIPS. See UNIVERSITIES AND COLLEGES.

GUGGENHEIM FOUNDATION. See AERO-NAUTICS.

GUGGIARI, JOSE P. President of Paraguay, See PARAGUAY.

GULICK, MRS. CHARLOTTE VETTER. American sociologist and founder of the Campfire Girls, died at South Casco, Me., July 28. She was born at Oberlin, Ohio, Dec. 12, 1865, and studied at Washburn College, Topeka, Kan., and Drury College, Springfield, Mo. She then studied for a year at Wellesley College, and, after her marriage in 1887 to Dr. Luther Halsey Gulick (1865-1918), sociologist and advocate of outdoor life, she studied medicine for a year to aid her husband in his contemplated work as a medical missionary. That purpose was abandoned and they moved to Springfield, Mass., to take up the Y. M. C. A. work in which Dr. Gulick was to become distinguished. While Mrs. Gulick was actively associated with her husband in several movements and also had independent interests, her most prominent activity was the establishment and conduct of the Campfire Girls of America, an organization similar to the Girl Scouts. In the World War Dr. and Mrs. Gulick went to France for the Y. M. C. A. She was a pioneer in the advocacy of sex instruction for children, and wrote *Emergencies* for the Gulick hygiene series, besides numerous articles for women's and child-study magazines.

GUMPPENBERG, HANN'S FREIHERR VON. German author and journalist, died March 29. He was born at Landshut, Bavaria, Dec. 4, 1866, and, moving to Munich, he attended the gymnasium and the University. He worked on various newspapers, at one time editing the *Hannover Kurier*. He wrote a psychological novel, *Der fünfte Prophet*, which appeared in 1895, and later published a collection of poems and produced several comedies, including: *Münchhausens Antwort* (1910); and *Der Pinsel Yings* (1914). He also wrote historical plays, notably: *König Konrad I* (1904); and *König Heinrich I* (1904). Two of his books, *Grundlagen der wissenschaftlichen Philosophie* (1903); and *Philosophie und Okkultismus* (1921) were translated into Swedish and French. *Die elf Scharfrichter* (1901) and *Überdramen* (1902) were written under the pen name, Jodok.

GUY, WILLIAM EVANS. American mining engineer and railroad builder, died at Coopers-town, N. Y., July 24. He was born at Cincinnati, Ohio, Dec. 22, 1844, and was educated at Miami University, Princeton University, Heidelberg, Germany, the Freiberg School of Mines, and

the Collège de France; he left the last-named institution in 1869. In 1862 he served in the Civil War in the Eighty-sixth Ohio Infantry. After a year, 1870-71, in mining engineering in Colorado, Mr. Guy became assistant geologist of the Missouri State Geological Survey, 1872. Then he helped in the founding of the St. Louis Bolt & Iron Company, of which he was an officer, 1872-81; in the meantime he organized and was president of the Tudor Iron Works, which absorbed the former company. In 1879 he took a degree at the Cincinnati Law School. He organized, built, and was president of the St. Louis & Eastern Railway Company, 1889-95, and was the organizer and president of the Madison Coal Company, 1889-99. He also organized, and became president and general manager of the St. Louis, Peoria & Northern Ry. until 1899, when it became part of the Illinois Central system. Two other railroads which he built were the St. Louis Valley and the St. Louis & Gulf, absorbed, respectively, by the Missouri Pacific and the Frisco systems. He retired from active business in 1913. Mr. Guy was for twenty years a member of the executive committee of the Civil Service Reform Association, and was a member of the St. Louis Academy of Science, the Archaeological Society, and the National Forestry Association. Westminster College conferred on him the degree of LL.D. in 1917.

GUYOT, YVES. French politician, economist, and publicist, died at Paris, February 21. He was born at Dinan, France, in 1843, and was educated at Rennes. After work as a journalist and service as a member of the Chamber of Deputies, he was appointed minister of public works in the Tirard ministry (1889) and retained this portfolio in the Freycinet ministry (1890-92). He became known as a champion of commercial and industrial freedom and an opponent of protection and of Socialism, especially of the government ownership theory. M. Guyot took a prominent part in the discussion of the Dreyfus affair, as a defender of the accused man. His literary output, chiefly in the form of contributions to economic and statistic periodicals and the transactions of learned societies, was enormous. He was well known in England, where he lectured frequently in English. In 1904 he visited the United States and was received cordially, as he had been one of the foremost European supporters of America at the time of the Spanish-American War. At one time he wrote regularly for the economic press of Great Britain and the United States. In association with A. Raffalovich, he published *Dictionnaire du Commerce, de l'Industrie, et de la Banque*. His works include *Études sur les Doctrines Sociales du Christianisme* (2d ed., 1881); *La Science Économique* (2d ed., 1887); *La Tyrannie Socialiste* (1893); *Les Conflits du Travail et leur Solution* (1903); *Le Commerce* (1908); *La Gestion par l'État* (1913; translated and published in New York City in 1914 as *Where and Why Public Ownership Has Failed*); *L'Industrie et les Industriels* (1914).

GYMNASTICS. The national Amateur Athletic Union gymnastic championships were held under the auspices of the Swiss Turn Verein, Union City, N. J., the individual winners in the various events being: All-around, Alfred Jochim, Swiss Turn Verein; long horse, R. Hradecky, Bohemian Gymnastic Association;

side horse, Alfred Jochim; parallel bars, Alfred Jochim; horizontal bar, Alfred Jochim; tumbling, William Hermann, Philadelphia; club swinging, Ray Dutcher, New York Athletic Association; rope climbing, John R. Waterman, United States Navy.

Princeton University won the intercollegiate championship, the victors in the several events being: All-around, F. Davidson, Chicago; horizontal bar, F. Davidson; side horse, W. Thompson, United States Navy Academy; parallel bars, F. Falkner, United States Military Academy; flying rings, R. Snively, Princeton; tumbling, W. Hobson, Dartmouth; rope climbing, R. Russell, Dartmouth.

See OLYMPIC GAMES.

GYPSUM. The production of gypsum in the United States in 1927 was characterized by diversification of products, stabilization of the enterprises engaged therein, and stabilization of the demand. According to the reports of the United States Bureau of Mines, the quantity of crude gypsum mined in the United States in 1927 was 5,346,888 short tons, or a decrease of 288,553 tons, which, compared with 1926, was a decrease of 5 per cent. Prices of gypsum and gypsum products declined during 1927, especially for wall board, block, and plaster, in some markets as much as 25 per cent under prices for 1926, but only 5 to 8 per cent when the country as a whole was taken into consideration. The principal reason for the decline in prices was the competition in a market which did not increase in proportion to the increase in production capacity in the industry, which according to some estimates was 25 per cent, whereas building activity was not as great as in 1926. The result was that plants operated at about 65 per cent of their capacity, the total number in operation being 60, or one more than during 1926. As in the previous year, New York led in the production of crude gypsum, with an output of nearly one-third of the entire quantity mined in the United States, while Iowa ranked second. The total value of sales in 1927 was \$42,174,454, as compared with \$46,721,219 in 1926. Gypsum imports showed an increase over 1926 in quantity but a considerable decrease in value, the total imports being 828,619 short tons, valued at \$1,167,581, of which Canada furnished 757,785 tons. Mexico, which ranked second, was the source of the supply of gypsum rock for an American plant in southern California. Of the imports, about 586,000 tons were sold calcined and were used in the manufacture of gypsum plasters. Production of gypsum in Canada reached a new high record, exceeding 1,000,000 for the first time in the history of the industry, when 1,063,117 short tons, valued at \$3,251,015 were produced, in response to an increased demand from American plants. Canadian output came principally from Nova Scotia, New Brunswick, Manitoba, and Ontario.

GYPSY MOTH. See ENTOMOLOGY, ECONOMIC.

HAGUE TRIBUNAL. See ARBITRATION, INTERNATIONAL.

HAIG, EARL (DOUGLAS HAIG). British soldier, commander-in-chief of the British Army in the World War from 1915 until the close of the War, died at London, January 30. He was born in Fifeshire, Scotland, June 19, 1861. He was educated at Clifton and at Brasenose College, Oxford. He joined the army in 1885 and

served with the Seventh Hussars in the Sudan, where he distinguished himself in Kitchener's famous march on Khartoum. He took part in the fight at Atbara, and on the final advance on Omdurman and Khartoum in 1898 and was mentioned in dispatches and received the British Medal, the Khedive's Medal, and promotion to brevet major. In the following year he saw service with the cavalry in Natal, and there came into close contact with a man with whom he was to be associated in the World War—General French, later Lord French of Ypres. He was chief of staff to French in the series of operations around Colesburg which preceded the close of the Boer War. He commanded a group of columns in 1901-02 and for his services in South Africa he was made an aide-de-camp to the King and a Companion of the Bath, was promoted to the rank of brevet colonel, and received the Queen's Medal with seven clasps and the King's Medal.

Haig was lieutenant-colonel commanding the Seventeenth Lancers, 1901-03, and inspector general of cavalry in India, 1903-06. He was promoted to major general in 1904 and to lieutenant-general in 1910. In 1909 he became, as a Knight Commander of the Royal Victorian Order, Sir Douglas Haig.

The outbreak of the World War, August, 1914, found Haig in the office of director of military training at the War Office. He prepared and sent to the front the first British troops in France, the "Old Contemptibles," as they were called afterwards because the Kaiser referred to them as the "contemptible little British army." They were commanded by Sir John French. It was not long before French sent to London an urgent call for Haig, and he went into active service as commander of the first of the two corps of the army. In the retreat from Mons to Ypres, Haig commanded the van and he took part in the battles of the Marne and the Aisne. French singled him out for praise for his "skillful, bold, and decisive" handling of his forces.

The military critics also found much to commend in Haig's leadership, in both offense and defense. In October, 1915, he fought the greatest battle the British Army had ever engaged in, the struggle at Ypres. After the retirement from Belgium in 1915, Sir Douglas was placed in command of the First Army, one of the two into which the reorganized British forces were divided. In the important battles of Neuve Chapelle, Festubert, and Loos, which followed, he won anew the right to be named as successor of French in the supreme command of the British Expeditionary Forces in France and Flanders when the former commander-in-chief retired, in December, 1915. Haig remained in command until the close of the War and gave loyal support and close cooperation to Marshal Foch after the French general took over the direction of the Allied forces in March, 1918. On Apr. 12, 1918, Haig issued his famous "backs to the wall" order (dated the day before), in which he lauded the British resistance to the great German advance and urged all ranks of the British Army to fight on to the end. Until the day of the Armistice, Foch lent an attentive ear to the plans of Haig for the use of the British.

After the War, Haig devoted much of his time to the welfare of the ex-soldiers, who were devoted to him. From 1919 to 1920 he was field

marshal commander-in-chief of the forces in Great Britain. Many high offices were suggested for him, but he preferred to work in aid of the war veterans and their families. Honors of all kinds, military and civil, were accorded to him. Twelve universities gave him honorary degrees, including Oxford, where his old college, Brasenose, had already made him an honorary fellow. He had been made a Knight of the Thistle (the highest Scottish order) in 1917, the year of his promotion to field marshal, and in June, 1919, he received the high distinction of membership in the Order of Merit. All the Allied nations conferred on him their most exalted honors. On Aug. 6, 1919, the House of Commons voted to him a grant of £100,000, and soon thereafter Sir Douglas Haig became Earl Haig, Viscount Dawick and Baron Haig of Bemersyde. The name "Bemersyde" is that of his ancestral home in Scotland; in 1921 a popular subscription of nearly \$1,500,000 purchased for Earl Haig the estates of Bemersyde. See *Lord Haig*, by Sir George Arthur (London, Heinemann, 1928).

HAIL INSURANCE. See **INSURANCE**.

HAITI, hā'tē. A West Indian republic comprising the western part of the island of Haiti or Santo Domingo, the other part comprising the Dominican Republic. Capital, Port-au-Prince. See **DOMINICAN REPUBLIC**.

AREA AND POPULATION. The area has been variously estimated at from 10,204 to 11,072 square miles; population, estimated, Jan. 1, 1927, 2,300,000 excluding 3000 foreign white residents and the military and naval forces of the United States stationed there in conformance with the treaty of 1915. The majority of the inhabitants are Negroes, but there is a large number of mulattoes, who are descended from the former French settlers. The language is a dialect of French known as Creole French. The capital, Port-au-Prince, has a population of approximately 125,000; Cape Haitien, about 22,-

and prices. Successful experiments have been conducted by American capital in connection with the growing of sisal. Mineral resources are considerable although undeveloped. They include copper, coal, and iron, for the working of which some concessions have been granted; also gold, silver, antimony, tin, sulphur, kaolin, limestone, porphyry, nickel, and gypsum. There are two sugar mills, a logwood factory, a cottonseed oil plant, and a number of smaller manufacturing plants supplying local requirements. Among the minor products manufactured in Haiti, of little commercial importance but typical of domestic life, are baskets, ropes, fish nets, and hammocks.

COMMERCE. The distribution of the foreign trade resulted in a favorable balance of \$2,418,989 in 1927-28 (Oct. 1, 1927 Sept. 1, 1928) as compared with an unfavorable balance of \$452,232 in 1926-27. The favorable trade balance had not been exceeded in a normal year and only once, in 1918-1919, since the establishment of the receivership. The total value of the foreign commerce in 1927-28 was \$42,915,502, an increase of \$11,865,094, or about 38 per cent over the preceding year. Of the total trade, exports amounted to \$22,667,246 as compared with \$15,299,088 in 1926-27 and imports to \$20,248,256 as against \$15,751,320 in the previous year. A considerable recession of business was felt in 1926-27, but the 1927-28 trade was also 10 per cent above that of 1925-26 and nearly as far above that of 1924-25, two years which were generally regarded as very favorable. The expansion of trade in 1928 was largely the result of an exceptional yield of coffee that found a ready market at remunerative prices. The dominant position of the United States in the import trade was maintained in 1928, imports from that source amounting to \$15,246,508, or 75.2 per cent of the total. France was the leading market for exports taking 49.7 per cent of the total.

EXPORTS OF HAITI'S MAJOR PRODUCTS

Product	1926-27		1927-28	
	Kilos	Value	Kilos	Value
Coffee	28,692,984	\$11,384,394	41,146,804	\$17,916,462
Cotton, raw	4,900,945	1,461,914	4,427,337	2,001,520
Cottonseed	4,746,216	118,293	787,149	28,823
Cottonseed fertilizer	5,365,216	61,311	6,415,465	144,811
Logwood	28,084,183	517,841	36,361,678	706,968
Sugar, raw	9,841,898	680,547	12,016,554	650,242
Cacao	1,629,979	336,186	2,393,486	445,548
Honey	787,827	150,229	660,505	126,012
Hides and skins				
Goatskins	182,180	122,755	210,656	142,126
Cattle hides	7,722	2,787	14,932	5,811
Cashew nuts	145,886	54,690	73,485	29,375
Lignum-vitæ	693,804	20,007	603,794	17,411
All other .....	.....	538,363	.....	452,137
Total .....	.....	15,299,088	.....	22,667,246

000; Cayes, 12,000; Gonaives, 10,000; and Port-des-Paix, 5000.

EDUCATION. Primary instruction is free and has been compulsory since 1910. In 1926-27 there were 1060 schools with 71,503 pupils enrolled. In recent years the rural schools have been much improved. Secondary education is provided by national *lycées* and by private institutions. The University of Haiti was established in 1921.

PRODUCTION, ETC. Haiti is preponderantly agricultural. Coffee, cotton, logwood, sugar, and cacao are exported in considerable volume, but prosperity follows the trend of coffee production

FINANCE. As the revenues of the Government are derived almost entirely from business (about 90 per cent from customs collections alone), the year 1927-28 naturally made a favorable showing and resulted in an appreciable strengthening of Haiti's financial position. Revenues of \$10,100,955 constituted a record and after allowing for disbursements of \$8,632,263, left a surplus of \$1,468,692. The budget for 1928-29 provided for revenues of 37,900,000 gourdes (of which customs duties supplied 33,600,000 gourdes) and expenditures of 37,898,486 gourdes. The chief item of expenditure was service

on the public debt which amounted to 12,528,885 gourdes. On Sept 30, 1928, the gross public debt stood at \$18,887,623 as compared with \$19,951,371 at the close of the fiscal year 1926-27, a reduction of \$1,053,748. In the same period the unobligated cash reserve in the treasury showed a large increase as a result of the budgetary surplus.

COMMUNICATIONS. In 1926 there were 158 miles of railway line, all privately owned. The number of passengers carried was 301,949 and gross receipts were \$205,500. There were 92 postal stations in 1926-27, 3,131,000 pieces of mail were handled, and gross receipts were \$57,000. In the same year there were 1490 miles of telegraph wire, 80,000 messages were sent, and gross receipts were \$35,200. There were also 4608 miles of telephone wire, 1556 telephone instruments, and gross receipts of \$79,800.

GOVERNMENT. The constitution as adopted by the people on June 12, 1918, provides for a National Assembly to consist of a Senate and House of Representatives. This body has never been elected. Instead, the legislative functions are carried on by the Council of State, consisting of 21 members appointed by the president and holding office at his pleasure and apportioned among the several departments, who were supposed to act until the president fixed the date for the election of the Assembly. As he had never done so, this body still functioned at the end of 1928. Executive power is vested in a president elected for four years by the Council of State. He acts through a ministry of five members. The President in 1928 was Louis Borno, who was elected April 10, 1922, and re-elected April 10, 1926.

HISTORY. Thirteen amendments to the Constitution of 1918, submitted to popular vote on Jan. 10, 1928, after having been approved by the Council of State, were ratified by a large majority. The most important one dealt with the election of the president and stipulated that his term of office should be six, instead of four, years and that he should be ineligible to succeed himself. In the spring the American Ambassador to Haiti, Hannibal Price, who had been appointed in 1925, was recalled by the State Department at Washington.

HALDANE, hăl'dān, THE RT. HON. RICHARD BURDON. British statesman and philosopher, died August 19, at Cloan, Aucherarder, Scotland. He was born at Cloan, July 30, 1856, and was graduated from the University of Edinburgh, where among other honors, he received the Gray and Ferguson scholarships in philosophy in 1876. He continued his study of German philosophy at the University of Göttingen. Studying law, he was called to the bar at Lincoln's Inn in 1879, and practiced under Davey in the Chancery Courts. In 1890 he became Queen's council, and by 1894 the extent of his work forced him to specialize, so that he was successful before the higher courts. Lord Haldane, who was a Liberal, was sent to the House of Commons from Haddingtonshire in 1885, being repeatedly returned until 1911. He served as the Gifford lecturer in natural theology at St. Andrews University from 1902 until 1904. He was appointed minister of war in 1905, when the Liberal party came into power, and, having studied army administration at the Berlin War Office, he commenced a reorganization of the military forces, establishing the newly created

General Staff in 1906, and developing his plan for the concentration of the reserve forces in 1908. The detailed organization which he had accomplished before he left the War Office to become Lord Chancellor in 1912 made possible the swift transportation of troops at the outset of the World War in 1914. Lord Haldane, however, did not at the time receive the credit later accorded him for his achievement. Instead, he was violently criticized because it was thought that his admiration for Germany had caused him to underestimate the imminent danger of war, and to advise insufficient preparation on his return from an armament limitation conference at Berlin in 1912. He held the Lord Chancellorship until he was excluded at the formation of the first coalition ministry in 1915. The Liberal party, to which he had belonged, having changed character, Lord Haldane joined the Labor party, and in 1924, when that party came into office, he again became Lord Chancellor, being the only member of the Government with previous experience in the cabinet. He was not accepted thoroughly, however, by the majority of this party, and he in turn not being able to accept thoroughly its principles, consequently did not dominate during the party's brief administration. Lord Haldane especially desired to extend the work of the Judicial Committee of the Privy Council, of which he was a member, by sending representatives outside of England to try cases on appeal, and accomplished a part of his task by improving the reputation of the council in India and the Dominion. Lord Haldane was created First Viscount of Cloan in 1911, and in 1915 was awarded the Order of Merit. He was also a Fellow of the Royal Society and a Knight of the Order of the Thistle. He wrote: *Essays in Philosophical Criticism* (with Seth, 1882); *Life of Adam Smith* (1882); *Education and Empire* (1902); *The Pathway to Reality* (1903-04); *The Reign of Relativity* (1921); *The Philosophy of Humanism* (1922); and *Human Experience; A Study of Its Structure* (1926).

HALE, WILLIAM GARDNER. American Latinist, died at Shippan, Conn., June 23. He was born at Savannah, Ga., Feb. 9, 1849. He was graduated from Harvard University in 1870, and studied at the Universities of Leipzig and Göttingen (1876-77). He served as tutor in Latin at Harvard, 1874-76 and 1877-80. In the latter year he was appointed professor of Latin at Cornell University, and in 1892 he was appointed head of the Latin department in the University of Chicago. He retired in 1919. He took a prominent part in establishing the American School of Classical Studies at Rome and was its first director (1895-96). He received the degree of LL.D. from Union College in 1895, from Princeton University in 1896, and from St. Andrews and Aberdeen in 1907. In 1892 he was elected president of the American philological Association. While in Rome Professor Hale, after a long study of the Vatican library, discovered a manuscript of importance that proved to be the work of Catullus, Roman poet, which had been mislaid in indexing. He was head of a committee organized to produce a set grammatical form in all countries, for the study of languages. His publications included: "The Cum-Constructs: Their History and Functions," in *Cornell Studies in Classical Philology* (1887-89); "The Sequences of Tenses in Latin," in *American*

Journal of Philology, vols. viii-ix (1887-88); *The Anticipatory Subjunctive in Greek and Latin* (1894); (with C. D. Buck) *A Latin Grammar* (1903); papers in classical journals, and several school books for the study of Latin.

HALL, JAMES PARKER. Dean of the University of Chicago law school, died at Chicago, March 13. Born at Frewsburg, N. Y., in 1871, he was graduated from Cornell University in 1894, and from the Harvard law school in 1897. Admitted to the bar in the latter year, he practiced at Buffalo, N. Y., until 1900, also lecturing on constitutional law and real property at the Buffalo Law School from 1898 until 1900. He was then appointed professor of law at Leland Stanford Jr. University. Coming to the University of Chicago in 1902, he was made dean of the law school in 1904, a position which he held until his death. Professor Hall served as major, judge advocate, in the United States Army, 1918-19. He was at one time a director of the the American Judicature Society, a member of the executive committee of the council of the American Law Institute, and president of the Association of American Law Schools, 1921-22. In addition to writing articles for various legal periodicals, and editing *American Law and Procedure*, 12 vols. (1910), Mr. Hall wrote: *Constitutional Law* (1910); and *Cases on Constitutional Law* (1913).

HAMILTON COLLEGE. A non-sectarian institution for the higher education of men at Clinton, N. Y., founded in 1812. A total of 438 students was registered for the 1928 autumn session, divided as follows: Seniors, 75; juniors, 98; sophomores, 111; freshmen, 154. There were 43 members on the faculty for the year 1928-29. The productive funds of the college were approximately \$3,943,989, and the income for the year 1927-28 was \$358,183. The library contained 125,269 volumes and 30,000 pamphlets. President, Frederick C. Ferry, Ph.D., Sc.D., LL.D.

HAMILTON, hām'il'tūn, LORD FREDERIC SPENCER. English author and former diplomat, died at London August 11. He was born Oct. 13, 1856, and, soon after leaving Harrow School, he joined the diplomatic service and was sent to Rome in 1876. Within the year he was appointed attaché to Lord Amphil, the British Ambassador at Berlin, and he later received successive appointments to St. Petersburg, Lisbon, and Buenos Ayres. He sat in Parliament as a Conservative for Southwest Manchester from 1885 until 1886, and as a Unionist for North Tyrone from 1892 until 1895. Besides writing numerous books, Lord Hamilton edited the *Pall Mall Magazine* until 1900. His writings include: *The Holiday Adventures of Mr. P. J. Davenant* (1915); *Some Further Adventures of Mr. P. J. Davenant* (1915); *The Education of Mr. P. J. Davenant* (1916); *The Beginnings of Mr. P. J. Davenant* (1917); *Lady Eleanor, Private Simmons, and others* (1918); *The Vanished Poms of Yesterday* (1919); and *Here, There, and Everywhere* (1921).

HAMILTON, HAMILTON. American painter, died at Norwalk, Conn., January 4. He was born at Oxford, England, Apr. 1, 1847, and was taken to America as a child. He was self-taught. As a young man he showed talent in portrait painting, and for several years practiced that art at Buffalo, N. Y. From 1875, following a visit to the Rocky Mountains, he devoted him-

self to genre and landscape painting. He spent a year in England and France painting, and met and was encouraged by John Ruskin. A year after his return from Europe in 1881, he made his home at New York. He became an associate of the National Academy of Design in 1886 and a National Academician in 1889. He passed considerable time painting in Connecticut, and was chiefly instrumental in the founding of the Silvermine, Conn., colony of artists. One of his best-known paintings is "Laramie Peaks," exhibited at Philadelphia in 1876 and now in the Buffalo Fine Arts Academy.

HAMPTON NORMAL AND AGRICULTURAL INSTITUTE. An institution founded in 1868 at Hampton, Va., for the education of Negroes and Indians. The enrollment on October 1, 1928, was 1044, of whom 988 were boarding students; and the enrollment for the two summer sessions of 1928 was 1132. The faculty for the regular school session ending May 29, 1928, numbered 125. The productive funds of the Institute on June 30, 1928, amounted to \$9,081,969, and the income therefrom was \$442,064. There were 64,738 volumes in the library. Principal, James Edgar Gregg, D.D.

HANDBALL. Joseph Griffin of the Detroit Y. M. C. A. supplanted George Nelson of Baltimore as the United States singles four-wall champion in 1928. The doubles title went to Alfred Schaufelberger and William Kamman of Detroit. Murray Vernon of the Crescent A. C. of Brooklyn successfully defended his national one-wall title.

HARBORS. See PORTS AND HARBORS.

HARDY, THOMAS. English poet and novelist, died at Dorchester, England, January 11. He was born at Upper Bockhampton, Dorsetshire, England, June 2, 1840. The great writer—whose works, especially his earlier poems and stories, evinced wide erudition and knowledge of classical and modern literature—did not attend a university or any of the famous schools of England but received his early education at home and at local institutions. This he supplemented, while working as an architect, by intense study and much reading at night, with courses in modern languages at King's College, London. At the age of sixteen he was articled to an ecclesiastical architect at Dorchester, and studied to good purpose; critics have professed to see in the structure of some of his books the influence of his training in architectonic design. In 1863 he received a prize from the Royal Institute of British Architects for an essay upon "Coloured Brick and Terra-Cotta Architecture." He worked as an architect, especially in the Gothic school, under Sir A. Blomfield in London from 1862 to 1867, before he forsook the profession for literature. His first essays were in verse, as were his last; throughout his life the writer retained his preference for metrical composition, despite the fame which he won by means of his prose masterpieces.

Hardy's first publication was an article in *Chambers's Journal* (March, 1865) entitled *How I Built Myself a House*. After a first unsuccessful attempt at fiction, called *The Poor Man and the Lady*, which George Meredith advised him to reconsider, he produced his first novel, *Desperate Remedies* (1871), a crude and fantastic effort, but interesting as a work of the author's formative stage. He struck a surer note in *Under the Greenwood Tree* (1872), an

idyllic love story, with a lightness of touch that is not surpassed in any of his later books. *A Pair of Blue Eyes* (1873) is a study in the ways of womankind, and *Far From the Madding Crowd* first won popular favor for Hardy. It ran anonymously as a serial in the *Cornhill Magazine* in 1874, and was attributed by some critics to George Eliot. Hardy's next production was a farce, *The Hand of Ethelberta*; a *Comedy in Chapters* (1876), which was illustrated by George du Maurier. In 1878 appeared *The Return of the Native*, considered by many the masterpiece of the Wessex novelist; in its opening chapters the description of Egdon Heath foreshadows the stormy careers of the characters in the story, and the latter shows a command of plot, character, and situations that is wanting in his earlier work. *The Trumpet Major* (1880) and *A Lodicean* (1881) are not generally numbered among Hardy's best books, but the ironic tale, *Two on a Tower* (1882) is a good example of his skill in handling complicated situations. *The Romantic Adventures of a Milkmaid* (1883) was followed by *The Mayor of Casterbridge*, one of Hardy's masterpieces, dominated by a strong central character.

Next came *The Woodlanders* (1887) and *Tess of the D'Urbervilles* (1891). The latter, probably the best known of all of Hardy's books, brought forth a storm of criticism. The tragedy of Tess, caught in a chain of uncontrollable circumstances, was deeply felt by a wide circle of readers, and he was charged with fatalism and rigid moralism, exemplified in the tale of the unfortunate Wessex maid. The unhappy ending of the story elicited regret from many readers.

Wessex Tales (1888), a collection of stories that had appeared in various magazines, was followed by *Jude the Obscure* (1895), a powerful exposition of the author's genius for the analysis of character. The story of Jude's early efforts to get a university education is said to be largely autobiographical. *Life's Little Ironies* (1894) is a collection of short stories well characterized by their collective title. *The Well Beloved* was published in serial form in 1892 and in book form in 1897. It was Hardy's last essay in fiction; critics hold that the attacks on *Tess* and *Jude* influenced the author to abandon prose and revert to metrical composition, always his favorite mode of expression. *Wessex Poems* appeared in 1898 and *Poems of the Past and Present* in 1901. In 1904-08 came *The Dynasts*, published in three parts, a metrical drama which is called one of the greatest works of English literature, combining a poetic philosophy of the mysteries of life with minute historical knowledge. It deals with the days of the first Napoleon. *Time's Laughing-stock* was published in 1909; *Satires of Circumstance* in 1914, and *Moments of Vision* in 1919. Despite his advanced years, he wrote many poems dealing with the World War, and two volumes of poetry appeared after the War, *Late Lyrics and Earlier* (1922) and *Human Shows* (1925). A poetic play, *The Famous Tragedy of the Queen of Cornwall at Tintagel in Lyonesse* was produced at Dorchester, Nov. 28, 1923, and published soon after. Mr. Hardy's last published poem was *Christmas in the Elgin Room*, which appeared in the *London Times* on Christmas Eve, 1927. *Winter Words in Various Moods and*

Metres and Old Mrs. Chundle were published in 1928.

There is a long list of books about Hardy, some published as early as 1902. (See THE NEW INTERNATIONAL ENCYCLOPÆDIA, vol. x.) *The Life of Thomas Edward Hardy*, by his widow, Florence Emily Hardy, was published in 1928. There were also published *Essay on Hardy* by H. M. Tomlinson, and *The Landscape of Thomas Hardy*, by Donald Maxwell.

In 1910 Hardy received the high honor of membership in the Order of Merit. He was made a Doctor of Literature of Oxford University, where he was Honorary Fellow of Queen's College, and Doctor of Literature of Cambridge, where he was Honorary Fellow of Magdalene College. Aberdeen University conferred on him an LL.D.

HARRIS MEMORIAL FOUNDATION.

See INTERNATIONALISM.

HARRISON, AUSTIN. English editor, author, and critic, died at Seaford, England, July 14. He was born Mar. 27, 1873, son of the late Frederic Harrison, English philosopher and author. The younger Harrison studied at Harrow, 1887-90, and at the Universities of Lausanne, Marburg, and Berlin. He was a foreign correspondent at Berlin and Vienna, and for five years represented Reuter's at Berlin. In 1905 he became joint editor of the *Observer* and in 1908 literary editor. In 1910 he became editor of the *English Review*, remaining in that chair until 1923, when he resigned, but he continued to contribute articles on foreign affairs. While editor of the *English Review* he introduced to the public several writers who became famous, including John Masefield. He was especially conspicuous as a writer against Germany in the World War period. His books are *The Pan-Germanic Doctrine*; *England and Germany*; *The Kaiser's War*; *Then and Now*; *Lifting Mist*; *Frederic Harrison*; *Thoughts and Memories*; *Essays of To-day and Yesterday*; *Pandora's Hope* (published in 1925; called an ambitious study of woman through the ages).

HARTZELL, härts'əl, JOSEPH CRANE. Former American Methodist Episcopal Bishop of Africa, died at Cincinnati, September 6, as the result of injuries received at the hands of a burglar on June 1. He was born at Moline, Ill., June 1, 1842, and, having been graduated from Illinois Wesleyan University and from the Garrett Bible Institute, he entered the ministry in 1868. He was given a church in Pekin, Ill., the following year, and from 1870 until 1873 he was pastor of Saint Charles Church, New Orleans. He remained in that city until 1896, serving as superintendent of educational and editorial work from 1873 until 1882, during which time he founded the *Southwestern Christian Advocate* in 1875, and served as assistant secretary until 1887, when he became secretary of the Freedmen's Aid and Educational Society of the Methodist Episcopal Church. He was a delegate to the General Quadrennial Conference from 1876 until 1896. In 1896 he went to Africa as missionary bishop, and there he worked for twenty years, part of the time with the co-operation and assistance of Cecil Rhodes, establishing missions throughout Africa and the Madeira Islands. Mr. Hartzell once went to the United States and to England as a representative of the Republic of Liberia, and succeeded in averting a break which threatened between

Germany and the Negro Republic. He retired from his African mission in 1916, when he had reached the age limit, and lived in Cincinnati.

HARVARD UNIVERSITY. A non-sectarian institution of higher learning for men at Cambridge, Mass.; founded in 1636. The number of students enrolled for the year 1928-29 was 8110, distributed as follows: College, 3233, divided into: Seniors, 635, juniors, 717, sophomores, 794, freshmen, 989; out of course, 98; graduate school of arts and sciences, 908; engineering, 270; theological, 110; law, 1589; medical, 515; dental, 114; school of public health, 13; graduate school of business administration, 868; school of architecture, 80; landscape architecture, 46; graduate school of education, 290; special students, 56; Bussey Institution, 18. For the summer session of 1928 the registration was 3149. The officers of instruction for 1927-28 numbered 1311, of whom 215 were professors, 43 associate professors, and 129 assistant professors. The total productive funds of the University in June, 1928, were \$86,702,875, and the total income for the year, including gifts for immediate expenditure, was \$11,639,715. The operating expenses for the year ended June 30, 1928, were \$10,589,940, which were budgeted from the following sources of income: From funds, \$4,570,632; from gifts and receipts for immediate use, \$1,674,853; from operating receipts including tuition, dormitory rentals, dining halls, and athletic sports, \$5,394,230. The number of volumes and pamphlets in the library was 2,784,300. New chemical laboratories and important enlargements to the law school were completed during the year.

The list of visiting professors and lecturers at Harvard during the year included a group of Chinese scholars under the Harvard-Yenching Institute of Chinese Studies, founded, as a result of a \$2,000,000 endowment from the estate of the late Charles Martin Hall of Niagara Falls, to carry out a study and interpretation of Chinese culture. Among the distinguished Sinologists secured to teach at Harvard were three professors from Yenching University: Baron Alexander von Staël-Holstein, Prof. Lucius Porter, and Prof. William Hung, together with Prof. Paul Pelliot of the Collège de France, an eminent scholar of the language, art, and archaeology of Central Asia, who was to lecture on the History of Chinese Art. Professor Paul Hazard of the Collège de France, whose special field is in the comparative history of the literatures of Southern Europe and Latin America, filled the position of Exchange Professor from France; from England came Charles Jasper Sisson, Lord Northcliffe professor of modern English literature at the University of London, and Ralph G. Hawtrey, assistant secretary of the treasury, who lectured in economics. Teutonic scholarship was represented by Prof. Gustav Pauli, Director of the Kunsthalle, Hamburg, Germany, who came to lecture on fine arts.

Among the lecturers from American colleges and universities were Verner Winslow Crane of Brown University, in the department of history, Ralph Mason Blake of the University of Washington, in philosophy and psychology, John Masson Smith of Grinnell College, in Romance Languages, and Miles Standish Sherrill of Massachusetts Institute of Technology, in physical chemistry. The Western exchange pro-

fessors chosen for the second half-year of 1928-29 were Assistant Prof. Harlan True Stetson, astronomy (Knox, Carleton, and Pomona) and Associate Prof. Louis Joseph Alexandre Mercier, French (Beloit, Colorado State College, and Grinnell), no appointments having been made for the first half-year. Dr. Walter Bradford Cannon, a graduate of Harvard, and since 1906 George Higginson Professor of Physiology at the Harvard Medical School, was chosen as exchange professor from Harvard to France for the academic year 1929-30.

Harvard University received an anonymous gift during the year of \$3,000,000 to build and endow a group of dormitories, dining halls, and common rooms, with accommodations for from 200-300 students, carrying out suggestions made by a committee on education published by the Harvard student council in 1926, for a separate college, within Harvard College, as an adaptation of the Oxford and Cambridge University systems, to promote undergraduate life and better understanding between diverse groups of students. President, Abbott Lawrence Lowell, Ph.D., LL.D.

HARVEY, här'vī, GEORGE (BRINTON McCLELLAN). American politician and journalist, died at Dublin, N. H., August 20. He was educated at the grammar school at Peacham, Vt., where he was born Feb. 16, 1864. He first worked as a reporter on the Springfield *Republican*, then on the Chicago *News*, and in 1882 he took a position on the New York *World* which he held until 1886. In 1890 he became insurance commissioner of New Jersey, but he returned to the *World* as managing editor in the following year. In 1893 he relinquished this connection, and the following year he commenced his association with various electric railroad companies. This field he forsook in 1898, and in 1899 he bought and became editor of the *North American Review*, which he published until his death. From 1900 until 1915 he was president of Harper & Bros., publishers, and he established a paper called *Harvey's Weekly*. For many years Harvey was active in politics, and received his title of "colonel" through being aide-de-camp on the staffs of Governors Green and Abbot of New Jersey from 1885 until 1892, and holding the same honorary positions on the staffs of Governors Heyward and Ansel of South Carolina. He expressed his political convictions through his journals in a forceful manner. He was, at first, a Democrat, and it was he who fostered the popular appeal for Woodrow Wilson to leave the presidency of Princeton University to be elected Governor of New Jersey, in 1910. Successful in this movement, Harvey continued his widely influential support until Governor Wilson was elected President of the United States in 1912. There was, however, a temporary estrangement, as Governor Wilson was not convinced of the advantage of the support of *Harvey's Weekly*, then edited by Colonel Harvey, and requested the withdrawal of his name from the editorial page. This difference increased until by the end of the World War, in 1918, the two men were no longer in accord, and Harvey used his utmost influence to prevent the United States from entering the League of Nations, as the President urged. Before the presidential election of 1920, Harvey had enrolled himself as a Republican, and it was believed that he was among those responsible for Warren G. Harding's nomination. Harding ap-

pointed him Ambassador to Great Britain in 1921, and, being active in post-war agreements, he held the position until shortly after the President's death in 1923. On his return to the United States, Harvey again took up journalism, and supported President Coolidge, though he was not active in his advocacy of Herbert Hoover in the presidential campaign of 1928. Harvey received the LL.D. degree from the universities of Nevada and Vermont, and from Middlebury and Erskine colleges, and the Litt.D. degree from Dartmouth. He was a trustee of Stevens Institute of Technology. He wrote: *Women* (1908); *The Power of Tolerance, and Other Speeches* (1911); *Hughes or Wilson?* (1916); and *Henry Clay Frith, the Man* (1928).

HAVANA, CUBA. PAN AMERICAN CONFERENCE. See PAN AMERICAN UNION.

HAVERFORD COLLEGE. An institution of higher education under the control of the Society of Friends, at Haverford, Pa.; founded in 1833. Registration for the autumn term of 1928 totaled 297 students, distributed as follows: Graduates, 12; exchange student, 1; seniors, 60; juniors, 63; sophomores, 75; and freshmen, 86. There were 33 members on the faculty. The productive funds of the institution amounted to \$4,188,313, par value, and the total income for 1927-28 was \$450,408. The library contained 107,000 volumes. President, William Wistar Comfort, Ph.D., Litt.D., LL.D.

HAWAII, hā-wī'ē. A territory of the United States, consisting of a group of islands in the north central Pacific Ocean; formally annexed, Aug. 12, 1898. The nine inhabited islands with their respective areas in square miles are as follows: Hawaii, 4015; Maui, 728; Oahu, 599; Kauai, 547; Molokai, 261; Lanai, 139; Niihau, 97; Kahoolawe, 69; Midway, 2.7. Capital, Honolulu, on the island of Oahu. The population according to the census of 1920 was 255,912 as compared with 191,909 in 1910. The population of the territory was estimated by the board of health to be 348,767 on June 30, 1928; of this number 228,276 were American citizens. The race classification showed 75,209 Caucasians, 20,720 Hawaiians, 25,984 part Hawaiians, 60,078 Filipinos, 134,590 Japanese, 25,310 Chinese, 6318 Koreans, and 548 of other races. The birth rate was 33.84 per 1000 population as compared to 37.16 for 1927, the total births being 11,543. The death rate for 1928 was 11.7 per 1000 population as compared to 11.87 for 1927, the total of deaths being 3992. The infant mortality rate was 83.69 as compared with 95.97 for 1927 and 104.21 for 1926. Marriages for the year were 2736 or 8.02 per thousand population, an increase of 140 marriages.

EDUCATION. Hawaii's public-school system is centralized under Territorial control. All public schools are under the direction of the superintendent of public instruction and commissioners appointed by the governor. The total expenditures for public schools, including the teachers' normal and training school, for the year ending June 30, 1928, was \$5,741,788. During the year there were maintained 250 schools with 2738 teachers and 75,931 pupils. There were 65 private schools with 440 teachers and 9497 pupils.

PRODUCTION AND COMMERCE. Agricultural interests experienced a most satisfactory year in 1928. The sugar industry recorded a steady gain in production without a corresponding increase

in acreage—a fortunate circumstance as the increase in production compensated somewhat for the lower average price of sugar. Practically all of Hawaii's sugar crop is refined on the Pacific coast and consumed west of the Missouri River. The 1927 crop showed the largest total production in the history of Hawaii, amounting to 811,333 short tons, and the 1928 crop according to late estimates was expected to reach 903,000 short tons. From 1924 to 1927, inclusive, production had increased steadily and substantially. The area cropped varied from 120,000 acres in 1922 to 127,417 acres in 1927, and dropped as low as 115,000 acres in 1923. Over this period annual production increased over 200,000 short tons.

Shipments of sugar to the mainland in 1927 reached the value of \$69,827,000, as compared with \$59,043,000 in the preceding year, and, in addition, a considerable return was received from molasses, a by-product of the sugar industry. Shipments of molasses to the mainland in 1927 were valued at \$570,000.

Good markets for larger quantities of canned pineapples continued. The principal problem of the industry, which is only second in importance to sugar in the islands' economic structure, at present apparently is to secure more lands to enable producing companies to satisfy the demand. Canned pineapples valued at \$33,800,000 were shipped to the mainland of the United States in the fiscal year ended June 30, 1928. The Association of Hawaiian Pineapple Canners reported the amount of capital invested in canneries in 1928 as \$16,381,500 and in fields, \$13,958,500; acres under cultivation, 49,356; cannery employees, 5000; and field employees, 6000. A total of 739 homesteaders produce and sell their crops to canners. Increasing use, with profit, is being made of pineapple by-products, which include pineapple bran, citric acid, alcohol, and vinegar.

While the production of coffee in Hawaii is small, it is of excellent quality and is rapidly gaining favor where it has been introduced. Approximately 5,650,000 pounds of milled coffee produced in 1927-28 in the Kona district were valued at \$1,500,000. The livestock industry of Hawaii now constitutes a vital factor in the wealth of the Territory. Approximately 80 ranches of varying sizes, containing 100,000 head of cattle, are about equally divided between those producing for beef and those for dairy-ing purposes.

FINANCE. The income of the various counties for the fiscal year to June 30, 1928, was \$13,759,714, as against \$12,618,826, or an increase of \$1,140,893 over the income for the previous year. The assessment of property, real and personal, in the Territory aggregated \$390,558,491, as against \$414,064,603 for the prior year. The total revenues collected aggregated \$11,579,668; the total expenditures, \$9,579,053, the excess income over operating expenses being \$2,169,951. The total bonded indebtedness on June 30, 1928, was \$23,585,000 as compared with \$24,210,300 on June 30, 1927.

COMMUNICATIONS. In the Pacific coast-Hawaiian trade, the Matson Navigation Company operated 25 vessels. Its fleet had in all 158,859 gross tons and offered fortnightly passenger and freight service between Honolulu and San Francisco, Portland, and Puget Sound. The Los Angeles Steamship Company entered the Hawai-

ian trade in 1922 and operated four steamers in passenger and freight trade. Oil tankers were operated between the Pacific coast and Hawaiian ports by the Associated Oil Company, the Standard Oil Company of California, and the United Oil Company of California. Honolulu is a regular port of call for steamers of the Dollar Steamship Company and those of the Admiral Oriental Line. The Inter-Island Navigation Company, established in 1833, owns and operates a fleet of 14 passenger and freight vessels engaged exclusively in the transportation of passengers and freight between ports of the islands in the Hawaiian group. There are steam railways on all the islands operating on regular schedules and most of them carrying passengers. In addition plantations have their private railway equipment for transporting cane and laborers. There were about 372 miles of railways in the islands, mostly of narrow gauge.

GOVERNMENT. The territorial elections are held regularly in November of each even year, to elect the delegate to Congress for two years, one-half of the Hawaiian Senate for four years, and all the members of the Hawaiian House of Representatives for two years. The sessions of the legislature are held biennially in odd-numbered years. Governor in 1928, Wallace R. Farrington.

HISTORY. From August 15 to 20 there was held a celebration in the Hawaiian Islands commemorating the one hundred and fiftieth anniversary of the discovery of the islands by Capt. James Cook, the navigator. Through the approval given by the President of the United States, representatives of Great Britain and her dominions were invited to attend the ceremonies and upon accepting the invitation sent war vessels to participate with those of the United States in the formal proceedings. Congress authorized the striking of a silver coin to commemorate the event. The programme was designed to recall and honor the great work of Captain Cook; also to suggest the blessings of prosperity and contentment that follow the continuation of the traditional good will prevailing in the Pacific. The United States Government was officially represented by Secretary of War Davis. See under **Celebrations**.

HAY. The total hay crop of the United States in 1928, according to estimates by the Department of Agriculture, was 105,953,000 tons produced on 70,919,000 acres or at the rate of 1.49 tons per acre and comparing respectively with 123,327,000 tons, 75,698,000 acres and 1.63 tons for the preceding year. The average farm price on Dec. 1, 1928, was \$11.74 and on Dec. 1, 1927, \$10.68 per ton. On this basis the total value of the 1928 yield was \$1,243,359,000 as against \$1,317,167,000, the corresponding value of the preceding crop. The production of 1928 comprised 93,031,000 tons of tame hay and 12,922,000 tons of wild hay produced on 57,775,000 and 13,144,000 acres and at the average rate of 1.61 and .98 tons per acre respectively. The average farm value on Dec. 1, 1928, was \$12.34 for tame and \$7.36 for wild hay per ton.

The tame hay yields in the leading States were reported as follows: New York 6,439,000 tons, California 5,104,000 tons, Wisconsin 5,017,000 tons, Pennsylvania 4,645,000 tons, Minnesota 4,387,000 tons, Michigan 4,277,000 tons and Iowa 4,203,000 tons. The average yield per acre ranged from .64 of a ton in Georgia to

3.77 tons in Arizona. The States in which the crop is wholly or largely grown under irrigation showed the higher average yields per acre. The average farm price per ton on Dec. 1, 1928, ranged from \$6.70 in North Dakota to \$22. in Rhode Island. The more important wild hay producing States in 1928 and their yields were as follows: Nebraska 2,526,000 tons, Minnesota 2,171,000 tons, North Dakota 1,355,000 tons, South Dakota 1,264,000 tons, and Kansas 1,107,000 tons. These States produced approximately two-thirds of the total wild-hay crop.

The tame-hay production of 1928 was made up of 29,054,000 tons of alfalfa hay (see **ALFALFA**), 22,976,000 tons of mixed clover and timothy hay, 10,720,000 tons of timothy hay, 9,755,000 tons of millet, sudan grass, and other miscellaneous hay, 8,436,000 tons of red, alsike, and crimson clover hay, 4,866,000 tons of soybean, cow-pea, and peanut hay, 4,255,000 tons of small grains cut green for hay, 2,476,000 tons of sweet-clover hay, 495,000 tons of Japan clover and lespedeza hay. The acreage of wild hay was reduced in the northern Great Plains area from Montana to Kansas, where in some sections drought had made cutting unprofitable.

A hay inspection school for the benefit of the Veterinary Corps of the United States Army was held from Nov. 10, to Dec. 11, 1928. Hay inspection and the adoption of Federal specifications were reported as assuring the Army of better grades of hay than were formerly obtained.

HAY, hā, MARY GARRETT. American political leader, died at New Rochelle, N. Y., August 29. She was born at Charlestown, Ind., Aug. 29, 1857, and attended the Western College for Women, in Oxford, O. Her first political activity was with the local prohibition organization of her State, and becoming interested in woman suffrage, she worked for ten years for the organization of the National American Woman Suffrage Association. She was also president of the New York State Federation of Women's Clubs, 1910-12, and of the New York Equal Suffrage League, 1910-18, and chairman of Woman Suffrage, 1912-18. After the nineteenth amendment had been passed, Miss Hay was active in educating women for the vote and she herself became a prominent member of the Republican party of New York State. She was chairman of the Republican Woman's National Executive Committee, 1910-20, and of the League of Women Voters of New York City, 1918-23.

HAYES, hāz, EDWARD CARY. American sociologist and educator, died at Urbana, Ill., August 7. He was born at Lewiston, Me., Feb. 10, 1868, and having been graduated from the Bates College, Lewiston, Me., in 1887, he studied at the Cobb Divinity School, 1889-92, and was ordained into the ministry of the Congregational Church the following year. He was given a parish in Augusta, Me., which he held until 1896, and a year later he was made dean of Keuka College, (N. Y.). In 1900 he went to the University of Berlin, and two years later he received the Ph.D. degree at the University of Chicago. He then resigned from the ministry, and became professor of economics and sociology at Miami University (Ohio), and in 1907 he was appointed professor of sociology and head of the department, at the University of Illinois, retaining that position until his death. Dr. Hayes was honored with the LL.D. degree from Grinnell College

(Iowa) in 1920, and from Bates College in 1927. He was advisory editor of the *American Journal of Sociology* and coöperating editor of the *Journal of Applied Sociology*; his books include: *The Sociologist's Object of Attention* (1903); *Memoir of Benjamin Francis Hayes* (1907); *Introduction to the Study of Sociology* (1915); and *Sociology and Ethics* (1921).

HAY FEVER. Plants which are able to cause hay fever in the sensitive seem to have been wrongly accused in certain cases, while others which have always been regarded as harmless have been found to attack certain individuals. As an example of the former class may be mentioned golden rod, once regarded as dangerous but recently given a clean bill of health. Of the second group, a new recruit has been found in the paper mulberry tree formerly included among the harmless vegetation but according to Dr. H. S. Bernton incriminated in a number of cases during the past two years. In some of these the sensitiveness to mulberry pollen developed in Greek emigrants exposed originally before coming to this country.

HAYTI. See HAITI.

HAYWOOD, WILLIAM DUDLEY. American agitator, died at Moscow, Russia, May 18. He was born at Salt Lake City, in 1869. It is said that he was first put to work in a mine at the age of nine, and two years later was "bound out" to a farmer by his step-father. He worked on the farm for four years, and then returned to mining, becoming a prospector and contractor and operating in Nevada, Utah, Idaho, and Colorado. He first attracted public notice by his leadership of the Western Federation of Miners, of which he was secretary, during the Cripple Creek, Colo., strikes of 1904. When ex-Governor Frank Steunenberg of Idaho was assassinated in 1905, Haywood, with others, was implicated by the confession of the assassin, Harry Orchard, but he was acquitted two years later. Haywood was ousted by the Western Federation of Miners and, as a member of the executive committee of the Industrial Workers of the World, became known as one of the most prominent and uncompromising radicals of America. He was a leader of the I. W. W. when he conducted the Lawrence (Mass.) textile strike in 1912 and the strike in the Paterson (N. J.) silk mills in 1913. In the latter year his advocacy of violence and sabotage, and his contempt for political action by the Socialist party, cost him his membership in the national executive committee of that organization. He became again conspicuous in 1917 when as secretary of the I. W. W. he was arrested on a charge of seditious conspiracy. He was sentenced to twenty years' imprisonment and a fine of \$10,000, but he was released on bail, and in April, 1921, fled to Russia, with whose Soviet Government he had long professed sympathy. In March, 1922, he headed a group of American members of the I. W. W. who received a concession to operate the Nadejdinsky Iron Works in Russia, but the enterprise was unsuccessful, and Haywood became leader of the Kuzbas autonomous colony, in Siberia. This, too, failed, and he returned to Moscow in 1923. The rest of his life was spent in minor activities for the Soviet Government.

HEART DISEASE. Dr. H. A. Christian, director of the Peter Bent Brigham Hospital, Boston, contributes an important paper on benign chronic heart disease to the *Journal of the Amer-*

ican Medical Association for August 25, in which there is no valvular lesion, no lesion of any kind with the exception of hypertrophy at times and no evidence of disease in the tracings of the electro-cardiograph. The subjects are mostly above the age of forty and complain of many of the symptoms normally present in organic heart disease, as shortness of breath, palpitation, heart flutter, etc. A convenient term is heart fatigue of functional nature. These patients are mostly cardiac hypochondriacs who cannot get their minds off their condition. Unwisely they have been told that they suffer from weak heart and the author impresses on his readers never to tell these subjects that they have any cardiac affection. Great care must of course be taken to exclude organic disease. Some of the patients with merely functional disease depend on small doses of digitalis either steadily or at intervals, but as there is no real work for this remedy the sense of relief must be purely mentally motivated. Although a certain amount of effort is useful in actual heart disease, these patients do much better at first under rest and comforting assurance. After a rest interval the patient should slowly and progressively readapt himself to a life of activity.

HEDJAZ. See ARABIA.

HELIUM. See CHEMISTRY, INDUSTRIAL; AERONAUTICS.

HERNSCHKE, hën'ke, ALFRED. See KLABUND.

HERCULANEUM. See ARCHÆOLOGY.

HEREDITY. See ZOOLOGY.

HESSE, hës. Since November, 1918, a republican state of the German Republic, situated in the western part of Germany; formerly a grand duchy of the German Empire. Area, 2968 square miles; population, at the census of 1925, 1,347,279. The capital is Darmstadt with a population of 89,465. Other important cities are Mayence, or Mainz, with 108,537 (with suburbs); Offenbach, 79,362; Worms, 47,015; and Giesen, 33,600. In 1926 there were 960 public elementary schools with 3898 teachers and 143,033 pupils. The areas and yields of the chief crops in 1926 were: Wheat, 63,645 acres, 42,591 tons; rye, 138,285 acres, 91,796 tons; barley, 110,902 acres, 85,601 tons; oats, 118,982 acres, 94,832 tons; potatoes, 147,225 acres, 784,655 tons; 34,602 acres under vines, yielding 2,988,260 gallons of wine. On Dec. 1, 1926 there were 292,266 cattle, 46,003 sheep, 333,836 swine, and 140,746 goats. The ordinary revenue and expenditure for the year 1927 were estimated to balance at 161,990,746 marks. The funded debt as of Jan. 1, 1928 was 644,959 marks, and the floating debt 20,160,000 marks. The government has a unicameral legislature and a responsible ministry. As a result of the elections held on Nov. 13, 1927, the Landtag (70 members elected for three years), the new diet is composed as follows: Socialist, 24; Democrats, 5; German People's party, 7; Centre, 13; German Nationalists, 3; Hessian Peasants Union, 9; Communists, 6; other parties, 3. The cabinet, nominated on Feb. 14, 1928, was as follows: Premier and Minister of Education, Herr Adelung; Finance and Justice, Herr Kirnberger; Interior, Herr Lenchner; Labor and Economic Affairs, Herr Korell.

HIBBEN, PAXTON. American journalist, died at New York, December 5. Born at Indianapolis, Ind., Dec. 5, 1880, he was graduated from Princeton in 1903 and after receiving the A.M. degree from Harvard in 1904 attended the law school

of that university for one year, being admitted to the bar in 1906. Entering the diplomatic service, he was secretary to the American Embassy at Petrograd, and at Mexico City, between 1905 and 1908, secretary of legation, and chargé d'affaires at Bogotá, Colombia, 1908-09, at The Hague and at Luxemburg, 1909-12, and at Santiago, Chile, until his retirement from the diplomatic service in the latter year. He became war correspondent for *Collier's Weekly* in 1914, transferring to the Associated Press the following year. After the United States entered the World War, Hibben was commissioned first lieutenant in the field artillery, Nov. 27, 1917, and later was made captain, being stationed successively at the War College, at Camp Grant, in France with the 332nd Field Artillery, at the finance bureau of the supply department, and in the office of the inspector general of the American Expeditionary Force, until his discharge, Aug. 21, 1919. After the Armistice, Hibben went to Armenia on a military mission, remaining from August until December, 1919; he then worked on the Near East Relief mission, 1920-22, being secretary of the Russian Commission from June until December, 1921. During the same period he was employed as staff correspondent for the *Chicago Tribune*, 1919-20, and he was war correspondent for *Leslie's Weekly* in the Near East, 1921. Returning to the United States, he became, in 1922, secretary of the Russian Red Cross commission in America, and of the American relief commission for Russian children, and the following year was made vice director for the U. S. Nansen relief mission. Hibben, who had been commissioned captain in the Officers' Reserve Corps, Feb. 7, 1920, was repeatedly in conflict with his superior officers, because he did not hesitate to express freely views on public matters, being particularly outspoken in his belief that the United States should recognize Soviet Russia. He wrote: *Constantine I and the Greek People* (1920); *The Famine in Russia* (1922); and *Henry Ward Beecher—An American Portrait* (1927), which was denounced for its criticism of the popular hero. At the time of his death he was working on a biography of William Jennings Bryan.

HICKSITE FRIENDS. See FRIENDS.

HIDES. See LEATHER.

HIGH SCHOOLS. See EDUCATION IN THE UNITED STATES.

HIGHWAYS. See ROADS AND PAVEMENTS.

HINITT, hi'nit, FREDERICK WILLIAM. American Presbyterian clergyman, and former educator, died at Indiana, Pa., October 25. He was born at Kidderminster, England, Nov. 2, 1866, and was taken to the United States at the age of eight; he was graduated from Westminster College in 1889, receiving the A.M. degree three years later. He was also graduated from the McCormick Theological Seminary, Chicago, in 1892, and being ordained into the Presbyterian ministry, he was assigned to a church in Warrensburg, Mo., where he remained until he went to Ottumwa, Iowa, in 1895. Dr. Hinit was chosen for the presidency of Parsons College, Fairfield, Iowa, in 1900, and 1904 he became president of Centre College of Kentucky, serving as moderator at the Kentucky Synod the following year. He was made president of Washington and Jefferson College in 1915, also becoming director of the Western Theological Seminary, Pittsburgh. He resigned from the college in 1918, in order to

work as a field secretary of the Y. M. C. A., with the A. E. F., having headquarters in London, 1918-19, and he acted as director for the United Kingdom of the Army Educational Commission. He was given the pastorship of the First Church, Indiana, Pa., in 1918, and he held that position until his death. He was secretary of the educational and administrative committee of the General Assembly of the Presbyterian Church, and he served on the general church council, 1923-24. Dr. Hinit received the Ph.D. degree in 1896, and the D.D. degree in 1902, from the University of Wooster, and in 1915 he was given the LL.D. degree from Centre College of Kentucky, and from Allegheny College.

HISA, PRINCESS. Infant daughter of the Emperor and Empress of Japan, died March 7. She was born at Tokyo, Sept. 10, 1927. She was the second child of the Emperor Hirohito and his consort, the Empress Nagako, and was named Sachiko (Hisa no Miya). The older child was also a princess (Jeru no Miya). In the absence of a male heir to the throne the succession was vested in the oldest brother of His Majesty, Prince Yasuhito, head of the house of Chichibu, frequently known as Prince Chichibu. See JAPAN.

HISPANIC SOCIETY OF AMERICA, THE. An international organization founded in 1904, in New York City, to establish a public library and museum designed to be a link between the English-, Spanish-, and Portuguese-speaking peoples, and to advance the study of the Spanish and Portuguese languages, literature, and history, and the study of the countries wherein Spanish and Portuguese are or have been spoken languages. Since 1904, when a collection of paintings, manuscripts, maps, and coins, and a library of about 40,000 volumes were placed in charge of the Society, valuable additions have been made to this collection, and a number of temporary exhibitions have been held of the works of noted Hispanic artists. Membership in the Society is limited to 100, is honorary, and includes specialists and scholars of all nationalities distinguished in the Hispanic field. The Society has published over 200 catalogues, reprints of old manuscripts, and monographs. The *Revue Hispanique* is published every two months in Paris. The museum and headquarters of the Society are at 156th Street, West of Broadway, New York City. The president for 1928 was Archer M. Huntington and secretary, George Bird Grinnell.

HISTORICAL ASSOCIATION, AMERICAN. A society for the promotion of historical studies and writing, formed in 1884 by a group of American scholars and chartered by Congress in 1889. Under provision made by the United States Government, it publishes annual reports and is charged with the office of communicating its proceedings and its information on the state of historical study and writing to the secretary of the Smithsonian Institution, for transmission to Congress.

In 1928 the Association had some 3500 members who represented not only every State of the Union but also Canada and many European and South American countries. It invites to membership not only those engaged in historical work and teaching but all feeling a sufficient interest in historical science to prompt them to join. Meetings of the Association are annual, that of the year 1928 having been held on December 28-31, at Indianapolis, Ind. Among

the subjects of papers delivered and topics discussed at the various conferences were the following: The Relation of the English Coal Industry in the Seventeenth Century to the Growing Economic and Political Power of the Town Merchant; Interrelationships of Social and Constitutional History; The Historical Beginnings of Judaism; The Mediæval Manor; Absentee Landlordism in the British Caribbean, 1750-1833; Commercial Relations between the United States and the Dutch West Indies, 1783-1789; Ethan Allen, an Interpretation; The New Crusade (the annual address of the president—James H. Breasted, of the University of Chicago); The Spanish Contribution to American Agriculture; The Cattlemen in the Agricultural History of the Northwest; The Central Theme of Southern History (a paper printed in the *American Historical Review* for October); The Problem of Coöperative Research for College Teachers; Origins and Significance of the Public Health Movement in the United States; The Ming Dynasty Background of Chinese Foreign Problems; "Diary of a Public Man," in *North American Review*, 1879; Conference on Hispanic America; Conference on The Problem of Freshman History Instruction.

For the encouragement of historical research the Association offers two biennial prizes of \$200 each, for the best monograph, printed or manuscript, in the English language, submitted by a writer who has not achieved an established reputation: The Herbert Baxter Adams Prize, awarded in odd years for an essay on the history of the eastern hemisphere, and in even years the Justin Winsor Prize for an essay on the history of the western hemisphere, including the insular possessions of the United States. Two annual prizes for which no awards were made in 1928 were: The George Louis Beer Prize of \$250, in honor of its founder, the late George Louis Beer, for the best work upon any phase of European international history since 1895; and a medal struck in honor of Jean Jules Jusserand, former Ambassador of the French Republic to the United States and a former president of the Association, for the best work on intellectual relations between America and one or more European countries. A fifth prize, established in accordance with the terms of the bequest of Miss Mathilde M. Dunning, provides that the income from the sum of \$2000 shall be used for the John H. Dunning Prize to be offered for the best historical essay by a member of the Association dealing preferably with the historical matter connected with the Southern States during the reconstruction period.

The official organ of the Association is *The American Historical Review* (quarterly). The *Annual Report* is also published, containing proceedings, important papers read at the annual meetings, texts of significant documents, reports on American archives, reports on history teaching, and papers on agricultural history. An additional publication issued during 1928 was *Annual Report, 1924, Supplement (Writings on American History for that year)*. Officers for the year were: President, James H. Breasted; first vice president, James Harvey Robinson; second vice president, Evarts B. Greene; secretary, John S. Bassett, who died Jan. 27, 1928, and was succeeded by Dexter Perkins, as acting secretary until his appointment at the 1928 meeting; treasurer, Charles Moore; assistant

secretary-treasurer, Patty W. Washington; editor, Allen R. Boyd. New officers elected for 1929 were: President, James Harvey Robinson; first vice president, Evarts B. Greene; second vice president, Ephraim Douglass Adams; secretary, Dexter Perkins; treasurer, Charles Moore; assistant secretary-treasurer, Patty W. Washington; editor, Allen R. Boyd.

HISTORY. See LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE; ITALIAN LITERATURE; SCANDINAVIAN LITERATURE; SPANISH LITERATURE.

HOCKEY. Professional hockey established itself as one of the most popular winter sports in 1928. More than a million persons witnessed the games played by the National Professional League, which comprised six United States teams and four from Canada. The Stanley Cup series to decide the world championship was played in Montreal, the New York Rangers winning by 3 games to 2 and a total of 6 goals to 5. When the regular league season closed, the Rangers were in second place in the American Group. They engaged in a series with the Pittsburgh Pirates to determine which team should meet the Boston Bruins who had finished first for the American Group honors. The Rangers defeated the Pirates by a total goal score of 6 to 4 and then triumphed over Boston by 5 goals to 2, thus qualifying for the Stanley Cup series with the Montreal Maroons, who had taken first place in the International Group of the league.

The Toronto Grads, who represented Canada in the Olympic Games (q.v.) swept all before them at Amsterdam. In the final match for the Olympic title they defeated the Swiss team by the overwhelming score of 13 to 0.

Winners of other important competitions during 1928 were: Canadian Professional League, Stratford Nationals; Canadian-American League, Springfield Indians; American Association, Duluth; Allan Cup, Manitoba University; Canadian Senior Intercollegiate Championship, University of Toronto. Among the United States colleges, Yale, Harvard, Princeton, and Dartmouth once more presented the strongest sextettes.

FIELD HOCKEY. There was an international flavor added to the field hockey competition in 1928 due to the invasion of the United States by an English women's team which won a large percentage of the games played. In the final match of the intersectional tournament played at Philadelphia, the visiting aggregation buried an All-American team under an 11 to 0 score.

HODSON, SIR JAMES (W. B.) Scotch surgeon, died on a train between London and Edinburgh, May 29. He was born May 15, 1858. He was educated at Queen's College, Belfast, Ireland; the University and School of Medicine, Edinburgh, and studied also at London, Vienna, and Paris. He was knighted in 1920 for public services during the World War, being created a Knight of the Order of the British Empire. He was at the front in France as a major and was twice mentioned in dispatches. Besides being president of the Royal College of Surgeons at Edinburgh, 1914-17, and vice president, 1917-19; he was consulting surgeon at the Royal Infirmary, Edinburgh, a member of the Dental Board of the United Kingdom, senior surgeon at the Royal Infirmary, and chairman of the governing board of the school of medicine of the Royal Colleges. He was the author of many papers dealing with surgery.

HOG CHOLERA. See VETERINARY MEDICINE.

HOGS. See LIVESTOCK.

HOLFORD COLLECTION. See ART SALES.

HOLGUIN, JORGE. Colombian statesman, died March 2, at the age of eighty-two. He was twice President of the Republic of Colombia, and continued his activity in politics to the end of his long life. He was also prominent in the business circles of the Republic. General Holguin was a member of the Colombian mission to Washington in 1890 concerning the Panama Canal, and it was while he was President of Colombia, in 1921, that the Colombian Congress ratified a treaty with the United States involving recognition of the independence of Panama.

HOLLAND. See NETHERLANDS.

HOLY CROSS, COLLEGE OF THE. A Roman Catholic college under the Society of Jesus, at Worcester, Mass.; founded in 1843. The enrollment for the autumn of 1928 totaled 1090 in the regular course, with a distribution as follows: Seniors, 245; juniors, 242; sophomores, 269; freshmen, 324. In the B.S. course there was an enrollment of 57 distributed as follows: Seniors, 10; juniors, 8; sophomores, 18; and freshmen, 21. The graduate enrollment in M.S. courses amounted to 5; and there were 5 special students. The faculty numbered 91, of whom 11 were new members in 1928. The library contained 100,000 volumes. President, the Rev. John M. Fox, S.J.

HOME DEMONSTRATION WORK. See AGRICULTURAL EXTENSION WORK.

HOME ECONOMICS. See AGRICULTURAL EXTENSION WORK; FOOD AND NUTRITION.

HONDURAS, hōn-dōō-rās. A Central American republic, bounded on the north and northeast by the Caribbean Sea, on the southeast by Nicaragua, on the southwest by Salvador and the Pacific Ocean, and on the west by Guatemala. Capital, Tegucigalpa.

AREA AND POPULATION. The estimated area is 44,275 square miles; population, Jan. 1, 1923, according to official figures, 773,408, mostly Indians with a strain of Spanish blood. The chief towns with their populations according to the latest available statistics are Tegucigalpa, 38,950; Santa Rosa, 13,000; Santa Barbara, 6000; San Pedro, 8000; and Juticalpa, 8000. The chief ports are Amapala on the Pacific and Porto Cortez and Omoa on the Atlantic.

EDUCATION. Elementary education is free and compulsory between the ages of 7 and 15. During 1926-27 there were 859 public, and 36 private, schools, three kindergartens, and 13 night schools, the average enrollment being 35,216 and attendance 28,277. There were 165 students enrolled in six normal schools or normal departments, 283 in eight secondary schools, 344 in four commercial schools, 58 in the school of law and political sciences, 27 in the medical school, and 10 in the school of engineering.

PRODUCTION, ETC. The principal occupation is agriculture and the chief product bananas. They are grown mostly along the Atlantic coast, and constitute the main export. American banana companies enjoyed a very prosperous year in 1927. More than 19,000,000 bunches of bananas were produced and exported. The record shipment in 1918 was 19,200,000 bunches. The production of sugar had steadily increased since 1915 and in 1917 over 60,790,000 pounds were produced as compared with approximately 31,000,000 in 1926. Other agricultural products in-

cluded coffee, coconuts, tobacco, corn, kaffir corn, beans, and rice. The exports of coffee in 1926-27 amounted to 3,153,000 pounds as compared with 2,496,000 pounds in 1925-26. There were one large silver mine and several small gold workings in the republic; deposits of zinc, copper, lead, iron, and coal are known but to date had not been worked. Aside from the sugar mills, manufacturing is on a small scale.

COMMERCE. The foreign trade of Honduras for the fiscal year ended July 31, 1927, amounted to \$28,176,706, of which \$10,630,416 represented imports and \$17,546,290 exports. The figures for the preceding fiscal year, 1925-26 were: Imports, \$9,899,950, exports, \$13,456,005, total \$23,355,955. There was, therefore, for the year 1926-27, an increase in imports of \$730,466, and in exports of \$4,090,285, or an increase in the total foreign trade of \$4,820,751. The exports of bananas alone amounted to \$13,580,937. Of the total exports the United States absorbed 77 per cent; 79 per cent of the imports came from the United States. The chief class of imports was manufactures, valued at \$6,364,769.

FINANCE. The following table from the Pan American *Bulletin* for September, 1928, shows the budget of general expenditures and revenues for the fiscal year 1928-29:

	Pesos
Revenues:	
Customs revenue	3,710,000.00
Monopolies	2,298,000.00
Stamp tax	840,000.00
Various services	1,455,000.00
Miscellaneous revenues	256,000.00
	8,559,000.00
Less: Percentage on receipts and commission on some revenues for special funds:	
	Pesos
For public instruction, 10% on customs revenue ..	345,000.00
For public instruction, 10% on stamp tax	279,000.00
For justice, 1% on stamped paper and revenue stamps	140,000.00
For justice, 1% on net revenue from liquor ..	18,555.00
	782,555.00
Revenues for the public services	7,776,445.00
Special revenues—special funds:	
Taxes for special funds ..	2,146,620.00
Payments and percentage of other revenue	782,555.00
	2,929,175.00
Total revenue	10,705,620.00
Expenditures:	
Interior	1,707,265.32
Justice	341,720.00
Public Health	235,000.00
Foreign relations	293,622.70
Public instruction	672,520.00
Promotion, agriculture, and labor	2,147,088.00
War and Navy	1,596,874.75
Treasury	1,166,820.80
Public credit	2,344,708.43
Total expenditures	10,705,620.00

COMMUNICATIONS. There are about 1000 miles of railway line. On July 31, 1926, there were 306 post offices and during the year 1925-26, 3,601,000 pieces of mail were handled. Mileage of telegraph wire at the end of the fiscal year 1925-26 totaled 3844; 1,520,000 messages were handled during the year and gross receipts were \$379,000. On July 31, 1926, there were 4343 miles

of telephone wire, 1652 telephone instruments, and receipts for 1925-26 were \$28,000.

GOVERNMENT. According to the constitution of Oct. 3, 1924, the executive power is vested in a president nominated and elected by popular vote, and holding office for four years; legislative power is in a chamber of deputies consisting of 43 members chosen for four years directly by popular vote. President in 1928, Dr. Miguel Paz Barahona.

HISTORY. During the year the United States Government was asked by both Guatemala and Honduras to use its good offices as mediator in an endeavor to bring about a settlement of the boundary dispute between Guatemala and Honduras, which had again been recently receiving the active consideration of those two governments. The United States Government, in accordance with this request, named Roy T. Davis, American Minister to Costa Rica, as its representative on a mixed commission to make a thorough inspection of conditions along the disputed border and to endeavor to fix upon a provisional line which could be accepted by both Guatemala and Honduras pending a definite and final agreement on a permanent frontier.

The commission was installed on Apr. 12, 1928, Dr. Carlos Salazar being president of the Guatemalan Commission and Señor don Augusto C. Coello, president of that of Honduras. The disputed area was valuable banana plantation soil and the matter became serious after a lapse of several years when the two countries attempted to give concessions to the same area for banana exploitation. The feeling in each country ran high against the other and the usual method of recourse to war was commonly heard in the press and in speeches. Secretary of State Kellogg suggested, after the boundary commission failed to make progress, that the entire matter be submitted to the International Central American Tribunal, created in Washington early in the year. Guatemala accepted the proposal, but Honduras rejected it on the grounds that the newly created tribunal did not have the technical facilities for handling the matter. Secretary Kellogg in a later note insisted upon the matter being handled by the tribunal and rejected the suggestion that the President of the United States or the Chief Justice of the American Supreme Court act in the case. There the matter apparently rested until the close of the year.

In elections held on October 28, Dr. Vincent Mejía Colindres was elected president of the Republic for a four-year term and Rafael C. Chávez, vice president.

Ratification of a general treaty of friendship, commerce, and consular prerogatives, signed by representatives of Honduras and the United States in Tegucigalpa on Dec. 7, 1927, were exchanged in Tegucigalpa on July 19, 1928. It replaced the treaty of July 4, 1864. The new instrument was ratified by the National Congress of Honduras on Mar. 7, 1928, and by the Senate of the United States on May 25, 1928, being signed by President Coolidge on June 9, and proclaimed on July 23.

HONDURAS, BRITISH. See **BRITISH HONDURAS.**

HONG KONG. A possession of Great Britain at the mouth of the Canton River, about 90 miles to the south of Canton; comprising an irregularly shaped island, 11 miles long from

east to west, varying from 2 to 5 miles in breadth, with an area of 32 square miles; also the opposite Peninsula of Kowloon, separated from it by a strait about a half-mile wide. Total area, 391 square miles. In 1916 a scheme was begun for the reclamation of 9,500,000 square feet of land from the sea in Kowloon Bay; this project was still in progress in 1928. The population, according to the census of 1921, was 625,166, of whom 612,310 were Chinese; estimated in the middle of 1925 at 874,420. The movement of population in 1926 was: Births, 4041; deaths, 12,516. In the same year the number of Chinese immigrants was 276,501 and the number of emigrants, 460,479. While education is not compulsory, the schools are under government inspection and required to keep certain standards. The total number of pupils in all schools in 1926 was 44,947 and the total expenditure on education, \$910,063. For higher education there is the British University of Hong Kong which is attended mostly by Chinese students.

The principal industries are sugar refining, shipbuilding, rope making, the manufacture of tobacco, cement, and knit goods, and tin refining. The latest available statistics for trade are those of 1925 when the imports were valued at £43,484,410, and exports £40,353,906. The revenue for 1925 was £2,711,843 and the expenditure £3,297,795. In 1926, 30,231 vessels (including 15,027 junks and 2829 steamships under 60 tons) representing altogether 28,371,104 tons, entered and cleared in the foreign trade. Of these, 3401 with a tonnage of 9,257,417 were British ocean-going steamers. The colony is under a governor aided by executive and legislative councils. Governor in 1928, Sir Cecil Clementi (appointed in 1925).

HOOVER, HERBERT (CLARK). American engineer and public official, who was elected thirty-first President of the United States on November 6, was born at West Branch, Iowa, Aug. 10, 1874, the son of a pioneer farmer-blacksmith. Both his parents were Quakers. Orphaned at the age of 10, he was sent to live on his uncle's nearby farm. When, two years later, another uncle established a Quaker Colony, with its own academy, near Newberg, Ore., young Hoover joined him. Having moved to Salem as the colony expanded, he determined to study engineering, and in 1891 persuaded his guardians to allow him to enter the first class of Leland Stanford, Jr. University. While a student he supported himself in various ways, working with the U. S. Geological Survey, in the summers, and in 1895 was graduated in engineering. He was a worker in a California mine for a year, then secured a place on the staff of Louis Janin, a celebrated mining engineer of the West. On Janin's recommendation Hoover was commissioned, in 1897, by an English syndicate to establish American methods in Australian mining companies. The Chinese government appointed him director general of mines two years later, and, making his base at Peking, he frequently prospected in remote districts. At the time of the Boxer Rebellion, 1900, he led in the defense of Tientsin.

During the next 13 years, Mr. Hoover was associated with mining, railroad, and metallurgic work in the United States, Mexico, Canada, Italy, Great Britain, South Africa, India, Russia, and other parts of the world, always showing particular executive ability. Being in Eu-

rope in behalf of the Panama-Pacific International Exposition at the outbreak of the World War, in July 1914, Mr. Hoover was made chairman of the American Relief Commission in London, which was aiding many Americans stranded in Europe without negotiable funds. Persuaded also to undertake the creation and direction of a neutral Commission for Relief in Belgium, he gave up his private interests, and, by continual negotiations in London, Brussels, Paris, Rotterdam, and the secret German headquarters at Charleville, he overcame the suspicions of the belligerents and established the relief work on an efficient basis. The Commission he directed received aid from governments, and private gifts, and of the \$1,000,000,000 entrusted to it, only one-half of 1 per cent was used for overhead expenses.

When the United States entered the War, in 1917, President Wilson appointed Mr. Hoover head of the U. S. Food Administration, and in that position he controlled the food supply of one-third of the world. He at once organized production and shipping, gaining the general support of business interests, leading an enthusiastic campaign to reduce consumption and waste, in the United States, and designating "meatless" and "wheatless" days.

After the Armistice was signed, Nov. 11, 1918, Mr. Hoover went to Paris, authorized by the American government to discuss questions of food supplies. The main problem was to provision Europe, using the wheat, pork, and other resources of the United States to the best advantage. He was an important influence in the revival of the economic stability of the world, as a member of the War Trade Council, as chairman of the U. S. Grain Corporation, of the U. S. Sugar Equalization Board, of the Interallied Food Council, of the food section of the Supreme Economic Council, and of the European Coal Council. He directed many of the economic measures of Europe during the armistice period, particularly the organization of food supplies in Poland, Serbia, Czechoslovakia, Germany, Austria, Armenia, and the Baltic States. He was also made chairman of the American Relief Administration in 1919, which attempted to provide proper nourishment for European children, and in 1920 he was appointed vice chairman of President Wilson's second industrial conference, and chairman of the European Relief Council.

His engineering and organizing experience together with his work in practical international economics well equipped him to become Secretary of Commerce, to which office President Harding appointed him on Mar. 5, 1921, and to which President Coolidge reappointed him. He straightway improved the functioning of the department and was said to have increased its output 14 times, with only a four-fold increase of personnel. In addition, he became chairman of the President's Conference on Unemployment, Sept. 20, 1921, and he served on the advisory committee of the Limitation of Armaments Conference, November, 1921, and on the World War Debt Commission; he was also chairman of the Colorado River Commission, and of the special Mississippi Flood Relief Commission, 1927.

As it was gradually accepted that President Coolidge would not be a candidate for the presidential nomination in 1928, it seemed a

natural development that his Secretary of Commerce, who had proved his understanding and capacity in connection with administrative problems, should lead the Republican party which made as its major issue the record of prosperity. Mr. Hoover, accordingly, was nominated by the Republican National Convention at Kansas City, Mo., on June 14. He resigned his secretaryship on July 14, crossed the continent to his home at Palo Alto, Calif., where he delivered his speech of acceptance on August 11, and returned eastward to speak at West Branch, Iowa., on August 21. His addresses were broadcast from ocean to ocean. His radio audience was estimated at 30,000,000. He pledged himself to farm relief, to uphold prohibition and the protective tariff, and to continue the foreign policy of the Coolidge administration. He later spoke in New York and in Tennessee. At the election, in which European countries showed a vital interest, because of the fear that Mr. Hoover, as President, would press commercial competition, and would insist on full payment of war debts, Mr. Hoover received 444 electoral votes, including those of Florida, North Carolina, Virginia, and Texas, against 87 for Alfred E. Smith, the Democratic candidate. He soon started on a "good will" tour of Central and South America, visiting Honduras, Nicaragua, Costa Rica, Ecuador, Peru, Bolivia, Chile, and Argentina, being received with enthusiastic acclaim and official welcome at the various capitals.

Mr. Hoover translated, with his wife, Agriola's *De Re Metallica*, and wrote, *Principles of Mining* (1909), and *American Individualism* (1922). His presidential campaign speeches were published as *The New Day* (1928).

See UNITED STATES under *Presidential Campaign*.

HOPKINS, WILLIAM ALONZO. French-American publisher, founder of the Paris newspaper, *Le Matin*, died February 27, at the age of eighty-seven. Mr. Hopkins went to Paris, on the advice of his physicians, in 1878, after a successful career as a foundryman in New Jersey. He interested himself in journalism, and was mainly instrumental in founding *Le Matin* as an independent newspaper. He also founded the American Relief Society (now the American Aid Society) in the French capital, and during the World War established and maintained the hospital of La Providence at Dinard, France.

HOPS. The production of hops in Europe in 1928, according to reports from various sources, was below that of 1927, but the quality was said to be very satisfactory. As reported by the International Institute of Agriculture, Rome, Belgium produced 4,630,000 pounds—only about 81 per cent of the crop of the preceding year, but of excellent quality—and Czechoslovakia had a yield of 16,192,000 pounds, which was only about 68 per cent of the yield of 1927. Reports received by the U. S. Department of Agriculture placed the production of England and Wales at 27,104,000 pounds from 23,762 acres. This yield was over 5 per cent below that of 1927, and the average yield per acre, 1141 pounds, was 172 pounds below that for the ten-year period 1918–1927. The production of hops in Germany was estimated at 18,446,000 pounds, or 16.5 per cent above that of 1927 and the largest crop since 1915. The area devoted to hops in 1928 was 38,048 acres, which is still below the pre-war average.

According to estimates published by the Department of Agriculture, the United States produced 32,742,000 pounds on 26,100 acres as compared with 30,658,000 pounds on 24,600 acres in 1927. The average yields per acre for the two years were 1254 and 1246 pounds respectively. As for several years previously, yields were reported only from the Pacific Coast States. Oregon produced 17,000,000 pounds on 17,000 acres, California 9,480,000 pounds on 6000 acres and Washington 6,262,000 pounds on 3100 acres. The average yields per acre for the three States were 1000, 1580, and 2020 pounds, respectively. The average farm price on Dec. 1, 1928, in these States was 19.3 cents per pound, or 3.6 cents below the corresponding price of the year before.

For the fiscal year ended June 30, 1928, the United States exported about 11,800,000 pounds of hops representing a value of approximately \$2,875,000. The imports for the same period reached about 750,000 pounds. The United Kingdom continued to take a large proportion of the hops exported from the United States. For four years the quantities so imported ranged from 4,162,000 pounds to 8,417,000 pounds while the imports from all other countries ranged from 737,000 to 4,901,000 pounds. The Continent of Europe produces largely a mild type of hops; but the British market favors the strong-flavored type produced in the United States and Canada.

The Canadian acreage for 1928 was reported at 1369 acres, an increase of 332 acres over 1927, and this increase in area is probably connected with the growth of English imports from British possessions. The importation of hops into Great Britain is determined largely by the stocks on hand. During recent years heavy accumulations of stocks have reduced the annual importation to less than 5,000,000 pounds while in years when stocks on hand were limited the importations rose to more than 10,000,000 pounds even after the increase in duty on imports in effect since 1925.

HOPWOOD, AVERY. American playwright, died at Juan-les-Pins, France, July 1. He was born at Cleveland, Ohio, May 28, 1884, and was graduated from the University of Michigan in 1905. He went to New York as special correspondent for the *Cleveland Leader* in 1905, and almost immediately sold his first play, *Clothes*, written in collaboration with Channing Pollock. It was produced in 1906. Thereafter, until within two or three years before his death, Hopwood was a frequent contributor of plays to the American stage and was one of the most prolific of playwrights. Many of his plays, however, were written in collaboration with others. Virtually every one of his plays was a popular success, but he was criticized for introducing broad situations in his attempt to secure a general popularity as a maker of "bedroom farces." In the fall of 1920 four of Hopwood's plays held the boards at one time on Broadway. He wrote: *Clothes*; *This Woman and This Man*; *Judy Forgot*; *Nobody's Widow* (produced in London as *Roxana*); *Fair and Warmer*; *Sadie Love*; *Our Little Wife*; *Double Exposure*; *The Gold Diggers* (with Mary Roberts Rinehart); *Seven Days*; *The Bat*; and *Spanish Love*; *The Girl in the Limousine*; *Ladies' Night*; *The Demi-Virgin*; *Why Men Leave Home*; *Little Miss Bluebeard*; *The Alarm Clock* (with David Gray); *The Best People*; *Naughty Cinder-*

ella; *Getting Gertie's Garter*; and *A Thief in the Night*.

HORTICULTURE. Large production attaining with certain crops a stage of overproduction, with associated low prices and resulting losses to the growers, marked the 1928 horticultural year in the United States. The Bureau of Agricultural Economics, of the United States Department of Agriculture, in its *Crop Report* of December, stated that approximately 3,917,000 bushels of peaches in California and 1,000,000 bushels in Georgia were not harvested or not utilized. Approximately 153,000 tons of California grapes were not harvested in 1928. The largest white potato crop on record brought very low prices to the growers. Good growing weather such as prevailed quite generally throughout the United States and Canada in 1928, was thus not without its drawbacks. A few crops, notably the orange and the grapefruit, enjoyed unprecedented prosperity due to low yields and effective marketing organizations. An unusual demand for apples in the markets of the Old World contributed to stabilizing apple prices despite unusual production in the Pacific States and the Shenandoah Valley region.

The threatened embargo in European markets of American apples, because of excessive arsenical spray residues, was successfully offset by the development of effective methods of removal, thus relieving an embarrassing situation. Extensive plantings of grapefruit in southern California, Arizona, and in the Rio Grande Valley of Texas were viewed with anxiety by careful students of the situation. A citrus census of the lower Rio Grande Valley of Texas, taken in the summer, showed a 50 per cent increase in grapefruit plantings. Whether adequate markets may be found for this potential increased production was considered problematical.

THE WORLD SITUATION. The 1928 apple and pear crops of Continental Europe were considerably below normal size, a situation very favorable to North American fruit which continued in strong demand throughout the fall months. Droughts throughout central and southern Europe were important causes of lower yields. That Russia was becoming an important factor in apple production was indicated in prospective shipments of 100,000 boxes to the Hamburg market. The Canadian apple crop was larger than in 1927, the greatest increase occurring in British Columbia. Quality, as represented by high color, was, however, below average. The Australian fruit crop harvested in the spring of 1928 was unusually large, reaching record proportions in most sections of the island continent. Apples were estimated at 8,500,000 bushels as compared with an average production of 6,500,000 bushels. Australian oranges in trial shipments were successfully transported to England. A total of approximately 46,000 acres of oranges in Australia indicated a need of new markets.

Ceylon, with considerable plantings, was a new entry in the grapefruit industry. The prune and olive crops of southern Europe were below average as a result of the unfavorable weather conditions. Decided improvement in English apple-growing practices was manifested in the fine exhibits of home-grown fruit at the Imperial Fruit Show held at Manchester, England, Oct. 19-27, 1928. For the first time, English fruit was exhibited in boxes. Grape production in the Northern Hemisphere, as reported by the *Inter-*

national Crop Report and Agricultural Statistics, approximated that of 1927, but was below the 1922-26 average. Japan exported large quantities of oranges to the Canadian markets for the holiday trade.

FOREIGN TRADE. Figures presented by the U. S. Department of Commerce for 1928, (Bureau of Foreign and Domestic Commerce Part 1, December 1928, *Monthly Summary of Foreign Commerce of the United States*) showed substantial increases in the value of both horticultural exports and imports, indicating an active trade situation. The total value of exported horticultural products for the year 1928 was \$152,829,490 as compared with \$144,012,880 for 1927. The total value of imported horticultural products for 1928 was \$136,854,602, as compared with \$129,550,970 for 1927.

As usual, tropical fruits and nuts constituted a conspicuous part of the imports. Bananas, with a total value of over \$35,000,000, were the largest single item and showed a slight increase in value over the 1927 period. Other import items to show a rise in value include lemons, olives, dates, figs, filberts, peanuts, and dried beans. Horticultural imports showing reduced value in the 1928 period include almonds, walnuts, dried peas, white potatoes, fresh tomatoes, and tomato paste. An analysis of export items shows quite consistent gains in value. Boxed apples, raisins, dried peaches, canned peaches and pineapples, prunes, peanuts, and dried peas were among the advancing products, while barreled apples, dried beans, grapefruit, and oranges were among the exports declining in value.

PRODUCTION IN 1928. With few exceptions, the yields of important horticultural crops in the United States were larger in 1928 than in 1927, as based on figures released by the United States Department of Agriculture on Dec. 14, 1928. In some cases higher production resulted in lower total values at the farm, this being the case with the white potato, grape, the commercial apple crop, and the strawberry. However, as a rule, satisfactory prices prevailed. In California the grape and the peach crops were so large that considerable portions of each were not harvested.

Data on individual fruits showed a total yield of 184,920,000 bushels of apples in 1928, as compared with 123,693,000 bushels in 1927. The peach crop of 1928 was 68,374,000 bushels as compared with 45,463,000 bushels in 1927. The 1928 pear crop totaled 23,783,000 bushels as compared with 18,373,000 bushels in 1927. The year's production of grapes, 2,636,076 tons—the largest on record—was not conspicuously larger than that of 1927, 2,605,238 tons. The orange crop, estimated at 43,000,000 boxes for 1928, was considerably larger than the 31,200,000 box crop of 1927. Grapefruit, estimated at 9,736,000 boxes for 1928, was not greatly different from the 1927 crop of 8,586,000 boxes. Florida, by far the leading grapefruit State, contributed 8,000,000 boxes to the 1928 crop. California lemons totaled 7,100,000 boxes in 1928, as compared with 6,000,000 boxes in 1927. Cranberries gained 7 per cent, from 496,000 barrels in 1927, to 531,000 barrels in 1928. Strawberries, with the immense production of 324,999,000 quarts in 1928, were only slightly above the 320,499,000 quart crop of 1927. The pecan crop, estimated at 42,000,000 pounds, was almost

twice as large as that of 1927, but less than the bumper crop of 1926. The almond crop was 14 per cent larger, and the walnut crop 49 per cent smaller than the crops of 1927.

That most fluctuating of the vegetables, the white potato, yielded 462,943,000 bushels in 1928, an increase of 60,000,000 bushels above the 1927 crop. Sweet potatoes, on the other hand, declined from 94,112,000 bushels in 1927, to 77,661,000 bushels in 1928. Cabbage declined from 1,202,800 tons in 1927, to 976,900 tons in 1928. Onions fell off from 23,525,000 bushels in 1927 to 19,025,000 bushels. The tomato crop was estimated at 1,405,400 tons in 1928, a decline from 1,641,300 tons in 1927. Celery also dropped off from 7,585,000 crates in 1927, to 7,173,000 crates in 1928. Other less important crops to show reduced yields in 1928 were carrots, lettuce, and spinach. Cantaloupes, with 15,521,000 crates in 1928, and 15,014,000 crates in 1927, did not greatly change. Cauliflower production in 1928 was 4,987,000 crates, as compared with 4,096,000 in 1927. Sweet corn for canning increased from 399,000 tons in 1927, to 536,000 tons in 1928. With 8,256,000 bushels in 1927, and 8,535,000 bushels in 1928, cucumbers showed but little change. Eggplant increased from 782,000 bushels in 1927, to 896,000 bushels in 1928. Peppers gained from 3,502,000 bushels in 1927, to 4,418,000 bushels in 1928. Watermelon production was recorded as 61,773,000 in 1928, as compared with 57,682,000 in 1927.

RESEARCH ACTIVITIES. Because of the intensity of culture practiced and the many serious insect and fungous pests, no branch of agriculture is more dependent on scientific research than is horticulture. Continued evidence of satisfactory support was forthcoming in 1928.

The Oregon Agricultural Experiment Station (*Oregon Sta. Bul.* 234, 1928 pp. 38), and the Washington Agricultural Experiment Station (*Washington Sta. Bul.* 226, 1928, pp. 100), reported on successful investigations in the removal of arsenical residues from apples and pears by washing with dilute hydrochloric acid. With this aid commercial growers were enabled to meet the international tolerance of less than one one-hundredth of a grain of arsenious oxide to one pound of fruit. The success of the experiment stations in the arsenical residue problem was an outstanding example of the effectiveness of combined effort, the United States Department of Agriculture, the respective agricultural experiment stations, and the commercial interests working together wholeheartedly.

The fact that severe pruning reduces vegetative growth and fruiting capacity has been conclusively demonstrated for the apple, pear, and other tree fruits. During the year the Michigan Agricultural Experiment Station (*Michigan Sta. Spec. Bul.* 162, 1927) and the Ohio Agricultural Experiment Station (*Ohio Sta. Bimo. Bul.* 13, 1928, No. 3, pp. 113-118), reported that red raspberries suffered material yield losses when heavily pruned.

The Michigan Agricultural Experiment Station (*Michigan Sta. Tech. Bul.* 89, 1928) found that the empirical practice of hardening tomato plants by exposure to cold prior to field planting, was not advantageous and was in fact harmful since the hardened portion failed to bear normal fruits. Apparently, hardening caused an excessive tissue differentiation and maturation which resulted in a permanent check.

Progress in the solution of fruit sterility problems was recorded during the year. For example, the Ohio Agricultural Experiment Station (*Ohio Sta. Bul.* 422, 1928), in studying cherry pollination, found abnormal pollen development in every variety studied. Such conditions were especially prevalent in the so-called Duke cherries, frequent in the sours, and occasional in the sweet varieties; and largely accounted for the inability of certain varieties to set fruit when self-pollinated.

PLANT QUARANTINES. As a measure to increase the effectiveness of the plant quarantine service, a new unit, known as the Plant Quarantine and Control Administration, was established in the United States Department of Agriculture, on July 1, 1928. By virtue of an amendment to the Quarantine Act, which became effective May 1, 1928, Federal authorities were given full right to search persons and vehicles for plants and plant products being transported between States or into the United States in violation of regulations. Rigorous inspection was maintained at the Mexican border and at all ports of entry, to prevent the introduction of pests. The campaign to clear up the Parlatoria date scale in the Southwest was vigorously pursued. A general survey showed this insect to be widely distributed and difficult to eradicate. On the other hand, attempts to control the Mexican fruit worm in the lower Rio Grande Valley of Texas were very successful, not a single infested fruit being found in the 1927-28 citrus crop. Mexican officials cooperated by conducting a similar clean-up campaign on their side of the river.

THE SEPTEMBER HURRICANE. Porto Rico, the Bahamas, the Virgin Islands, and other West Indian islands suffered terrific damage from the September hurricane which finally spent its force in Florida and along the Atlantic coast. According to the report of the Central Survey Committee, appointed by Governor Towner of Porto Rico, the crop losses in Porto Rico totaled over \$46,000,000 and this did not include necessary buildings such as packing houses, etc. The coffee industry alone suffered over \$18,000,000 loss with estimates that three to five years will be required to restore damaged plantations. The losses in the banana, citrus, and coconut-growing industries were estimated at \$5,656,160, \$3,255,811, and \$1,650,829 respectively. The value of the gardens destroyed was over \$2,000,000. Florida suffered moderately in comparison to Porto Rico. The *New York Packer* estimated that 2,000,000 boxes of Florida citrus fruit were destroyed. The California citrus growers responded to the situation by donating the proceeds from the sale of five cars of citrus fruit to Florida relief, a highly commendatory act in view of the intense rivalry between the two States. Severe damage to the winter tomato crop in the Bahamas was considered less serious in view of the possibility of rapid replanting.

HORTICULTURAL PERSONNEL. The year 1928 witnessed several noteworthy changes in the ranks of professional horticulturists. Dr. U. P. Hedrick, of the New York (Geneva) Experiment Station; Dr. S. W. Fletcher, of the Pennsylvania Experiment Station; and Professor V. R. Gardner, of the Michigan Experiment Station, all known because of their outstanding leadership in American horticulture, were advanced to directorships in their respective institutions. Dr. Eugene C. Auchter, horticultur-

ist of the University of Maryland, was selected as head of the newly organized office of Horticultural Crops and Diseases in the United States Department of Agriculture. The services of Dr. J. T. Rosa, Jr., one of the most promising of the younger scientific horticulturists of the nation, were lost to the University of California through his untimely death on August 8, at the age of 33 years.

Col. William Boyce Thompson, founder of the Boyce Thompson Institute for Plant Research at Yonkers, N. Y., and of the Southwestern Arboretum in Arizona, was the recipient of the highly coveted George Robert White Medal of Honor, awarded by the Massachusetts Horticultural Society for eminent service in horticulture.

BIBLIOGRAPHY. A large number of books of general horticultural interest were published during the year. Among those of note may be recorded: L. H. Bailey, *The Garden Lover* (New York, 1928); O. W. Barrett, *The Tropical Crops* (New York, 1928); W. H. Chandler, *North American Orchards* (Philadelphia, 1928); E. H. M. Cox and G. C. Taylor, *Primulas for Garden and Greenhouse* (London, 1928); A. C. Hottes, *The Book of Shrubs* (New York, 1928); H. A. Jones and J. T. Rosa, *Truck Crop Plants* (New York and London, 1928); J. W. Lloyd, *Muskmelon Production* (New York and London, 1928); F. F. Rockwell, *Iris* (New York, 1928); F. C. Sears, *Fruit Growing Projects* (New York, 1928); C. L. Thayer, *Spring Flowering Bulbs* (New York, 1928); H. H. Thomas, *Herbaceous Border Flowers* (London and Toronto, 1928); H. B. Tukey, *The Pear and its Culture* (New York, 1928); R. A. Van Meter, *Bush Fruit Production* (New York, 1928); E. H. Wilson, *More Aristocrats of the Garden* (Boston, 1928).

See ENTOMOLOGY, ECONOMIC.

HOUSTON. See TEXAS.

HOWARD, KEBLE. See BELL, JOHN KEBLE.

HOWARD, how'ard, RALPH HILLS. American civil engineer, died at Petoskey, Mich., September 20. He was born at Zanesville, Ohio, Aug. 15, 1870, and after attending the city high school, he studied engineering under Edmund Turner, a civil engineer. His first employment was as a draftsman in 1889 on the Cincinnati & Muskingum Valley R. R., later a part of the Pennsylvania R. R. After service in the engineering department in 1901 he went to Pittsburgh, Pa., to join the engineering organization of the Pittsburgh, Cincinnati, Chicago & St. Louis R. R. A year later he was appointed assistant engineer on the St. Louis division of the Vandalia R. R., which subsequently was merged with the Pennsylvania R. R. Mr. Howard was made principal assistant engineer of the construction work of the Chicago & Eastern Illinois R. R., in April, 1905, and six months later he was promoted to be engineer of maintenance of way, holding that position for five years. He became, in January, 1911, chief engineer of the Great Southern Lumber Company, and engineer of the maintenance of way of the New Orleans, Great Northern R. R., being also in charge of construction, and in June of the same year he became general manager of the railroad. In May, 1915, he was placed in charge of the Wabash Railway Company, with headquarters at St. Louis, and Oct. 1, 1923, he was made chief engineer of the road.

HOWARD UNIVERSITY. A non-sectarian institution for the higher education of men and women at Washington, D. C.; incorporated by

Act of Congress, Mar. 2, 1867, "for the education of youth in liberal arts and sciences," open to students without regard to race, but principally for the education of Negroes. The registration in the several colleges and schools of the University for the summer school and autumn quarters of 1928 totaled 2384, and was distributed as follows: College of liberal arts, 748; college of education, 483; school of applied science, 70; school of music, 50; school of religion, 31; school of law, 88; school of medicine, 357; academic evening classes, 155; summer session, 404. The faculty in the autumn totaled 183 members, divided as follows: Academic, 64; medical, dental, and pharmaceutical, 84; law, 12; religion, 7; music, 6; applied science, 10. The total endowment amounted to \$843,018, and endowment income for 1927-28 to \$41,351. The library contained 46,389 volumes. The United States Government appropriated \$240,000 for maintenance for 1928-29; and \$150,000 toward the construction of a chemistry building. The Secretary of the Interior was authorized to enter into a contract not to exceed \$390,000 for this building, the remaining \$240,000 to be appropriated by the second session of the Seventieth Congress, which convened Dec. 3, 1928. An additional appropriation of \$40,000 was authorized by the Second Deficiency Act (1928), for the new dormitory building for women, bringing the total cost up to \$190,000. Miscellaneous donations totaled \$7989. Administrative officers: Mordecai W. Johnson, S.T.M., D.D., president; Emmett J. Scott, A.M., LL.D., secretary-treasurer.

HUDSON RIVER BRIDGE. See BRIDGES.

HUGHES, CHARLES EVANS. See PAN-AMERICAN CONFERENCE; WORLD COURT.

HUGHITT, MARVIN. American railway official, died at Lake Forest, Ill., January 6. He was born in Genoa township, Cayuga County, N. Y., Aug. 9, 1837. Mr. Hughitt was connected with railroading in the Western and Northwestern sections of the United States for three-quarters of a century, and at the time of his death was still in active service as chairman of the finance committee of the Chicago & Northwestern Railway Company. He was one of the last of the American railway pioneers, in age and length of service second only to Chauncey M. Depew, who died Apr. 5, 1928. Mr. Hughitt began his railroad service as a telegrapher for the Chicago & Alton and the Illinois Central. He was divisional trainmaster of the latter road during the Civil War, and earned promotion by skillful handling of trains to move troops for the Federal Government. Twice within a week he remained continuously at the dispatcher's key for thirty-six hours. He became division superintendent and general superintendent of the road, then became in turn assistant general manager of the Chicago, Milwaukee & St. Paul and general manager of the Pullman Palace Car Company. In 1872 began his more than a half-century of connection with the Chicago & Northwestern, successively as general superintendent (1872), general manager (1876), vice president and general manager (1880), president (1887), chairman of the board (1910), and chairman of the finance committee (1918). He was also a Director of the New York Central system and the Merchants' Trust Company of Chicago.

HULDINSKY COLLECTION. See ART SALES.

HULL, ARTHUR EAGLEFIELD. A distinguished

English organist and musicologist, died in London, November 4. He was born at Market Harborough, Mar. 10, 1876, and studied in London under Sir Henry Wood, Dr. Pearce, and Tobias Mathay. In 1900 he founded the Huddersfield Chamber Music Society and in 1908 the Huddersfield College of Music, of which he was principal until his death. From 1904 until his death he also was organist and choirmaster of Huddersfield Parish Church. In 1912 he added to his already numerous responsibilities those of editor of the *Monthly Musical Record*. Chiefly through his efforts the British Musical Society was established in 1918. He wrote *Organ Playing, its Technique and Expression* (1911); *Modern Harmony, its Explanation and Application* (1914); *A Short History of Music* (1916); *Modern Musical Styles* (1916); *Design or Construction in Music* (1917); *A Dictionary of Modern Music and Musicians* (1924); *Music: Classical, Romantic and Modern* (1927). He edited the complete organ works of Bach and Mendelssohn, and translated into English Rolland's *Handel and Beethoven*.

HUMPHREYS, MILTON WYLIE. American educator, died at Charlottesville, Va., November 20. He was born in Greenbrier County, Va. (now W. Va.), Sept. 15, 1844, and served in the Confederate Army, 1862-65. He was graduated from Washington and Lee University in 1869, being at the same time associate professor of Latin and Greek at that university, and adjunct professor of ancient languages, 1870-75. While on leave of absence, 1872-74, he studied at Berlin and Leipzig, receiving the Ph.D. degree from the latter university in 1874. When Vanderbilt University was founded in 1875, Dr. Humphreys was appointed professor of Greek. Leaving this post in 1883, he became professor of Latin and Greek at the newly established University of Texas. He joined the faculty of the University of Virginia in 1887, teaching Greek until his retirement, Sept. 15, 1912. He was vice president of the American Philological Association, 1880-82, and president, 1882-83. Besides being American editor of the *Revue des Revues*, 1878-88, he published interesting editions of *The Clouds* of Aristophanes (1885), the *Antigone* of Sophocles (1891), and the oration *On the Crown* of Demosthenes (1913). Dr. Humphreys was an accomplished mathematician, as well as a classical scholar. His interpretive skill, and his mastery of ancient metres were considered extraordinary. His learning and understanding have been particularly noted in his introduction to the *Antigone*, and in several papers printed in the *Transactions of the American Philological Association* (1876, 1878, 1879), including: "On Certain Influences of Accent in Latin Iambic Trimeters"; "On Elision, especially in Greek"; "The Influence of Accent in Latin Dactylic Hexameters"; and "On the Nature of Cæsura."

HUNGARY. A state of Central Europe; formerly a kingdom constituting with Austria the Dual Monarchy of Austria-Hungary. Capital, Budapest.

AREA AND POPULATION. Before the World War Hungary had an area of 125,609 square miles; area at the time of the census of 1920, 35,875 square miles. Population before the War, according to the census of Dec. 21, 1910, 20,886,487; population at the census of Dec. 31, 1920, 7,980,143; estimated Dec. 31, 1926, 8,457,852. After the

census of 1920 was taken, an additional area of 36 square miles, with a population of 7000 was awarded to Hungary. Budapest, the capital, had a population at the 1920 census of 928,996. Other cities with a population of more than 100,000 at the same census were: Szeged, 119,109; and Debrecen, 103,186. The movement of population in 1926 was: Births, 229,484, deaths, 139,905;

permanent meadow and pasture, 796,000 acres of shrubs and bushes, and 2,700,000 acres of woods and forests. The total value of field crops in 1927 was \$363,358,000, including wheat, \$105,000,000; corn, \$62,997,000; rye, \$28,292,000; and potatoes, \$24,947,000. There were 186,000 metric tons of beet sugar produced in 1927-28 according to the latest estimates. In 1927 there were

INDUSTRIAL PRODUCTION

Product	Quantity (thousands of metric tons)		Product	Value (thousands of dollars)	
	1926	1927		1925	1926
Coal	827	784	Iron, metal, and machinery	61,688	72,454
Lignite	5,822	6,243	Food products and tobacco	159,091	161,196
Iron ore	182	194	Stone and glass	12,763	17,551
Pig iron	189	300	Textiles	43,677	46,109
Steel (ingots and castings)	328	472	Woodworking and bone	9,158	8,768
Artificial silk	441*	...	Leather and shoes	12,400	11,387
			Chemicals	20,658	27,105
			Paper, printing, film, and duplicating	8,645	10,864

* Thousands of pounds.

marriages, 76,849. The population of 1920 was distributed according to religion as follows: Roman Catholics, 5,096,729, or 63.9 per cent; Helvetican Evangelicals, 1,670,144, or 21 per cent; Augsburg Evangelicals, 497,012, or 6.2 per cent; and smaller numbers of Greek Catholics, Greek Orientals, and Unitarians. The Jews numbered 473,310, or 5.9 per cent.

EDUCATION. In the school year 1925-26 there were 6438 elementary schools with 656,349 pupils and 16,705 teachers. There were also 4528 general and 1092 agricultural continuation schools. There were 19 training colleges for elementary school teachers for men and 24 for women with 590 teachers and 4901 students. The number of primary schools for boys was 163, for girls 212, with 87,161 pupils and 3392 teachers. For secondary education there were 28 gymnasia, 70 realgymnasia, 22 modern schools, and 32 girls' secondary schools. The total number of teachers in these secondary schools was 2959 and the number of students 61,757. Hungary has four universities and since 1919 an independent faculty of economics at Budapest all maintained by the state. In 1926-27 the University of Budapest had 373 professors and 5393 students; the University of Szeged, 80 professors and 1135 students; the University of Pecs, 68 professors and 1005 students; and the University of Debrecen, 57 professors and 952 students. There are also many theological schools and a number of technical institutions for higher learning, such as technical high schools, etc.

CROPS: AREA AND PRODUCTION

Crop	Area ^a		Pro- duction ^c
	1927	1927	
Wheat	4,049	76,933	
Rye	1,653	22,569	
Barley	1,011	23,319	
Oats	637	21,717	
Corn	2,589	68,347	
Potatoes	626	66,403	
Sugar beets	154	1,455 ^d	
Grapevines	542	51,566 ^d	
Tobacco	58	60,626 ^e	

^a Thousands of acres; ^b unit, metric ton; ^c thousands of units—bushels, except as indicated; ^d unit, gallon of must; ^e unit, pound.

PRODUCTION, ETC. In 1926 there were in Hungary 13,623,000 acres of arable land, or about 18 per cent of the total area, 4,154,000 acres of

1,805,000 cattle, 2,387,000 swine, 1,611,000 sheep, 36,000 goats, and 903,000 horses.

VALUE OF HUNGARY'S FOREIGN TRADE, BY LEADING COMMODITIES
[In thousands of pengos, each exchanging at \$0.1749]

Commodity	1926	1927
IMPORTS		
Wood and wooden products ...	108,025	130,879
Cotton cloth	86,556	92,062
Coal	58,348	57,598
Wool cloth	50,160	57,369
Machinery and apparatus	36,823	47,409
Paper and paper ware	34,466	39,417
Cotton yarn and thread	35,990	38,618
Crude metals	29,527	31,820
Mineral oil	23,752	26,472
Leather, prepared	19,856	25,112
Hardware	18,707	24,065
Worsted	17,544	22,582
Gauze of crepe or pure silk	13,418	22,153
Raw tobacco	25,674	21,438
Silk and half-silk fabrics	13,013	17,239
Silk and silk thread	7,763	16,065
Hides and skins	12,431	15,869
Raw cotton	12,949	15,196
All others	357,059	446,448
Total	952,061	1,146,797
EXPORTS		
Wheat	135,627	105,132
Livestock	94,582	91,611
Flour	30,989	75,199
Poultry	39,235	42,736
Rye	50,794	40,614
Sugar	27,881	29,304
Eggs	29,991	23,981
Feathers	16,754	20,757
Machinery and apparatus	15,421	17,520
Lard and bacon	32,887	17,235
Barley	11,878	16,669
Electric machinery and appliances	18,169	15,807
Wool	18,226	15,330
Iron half-manufactures	9,900	13,881
Hardware	11,969	13,207
Clover and alfalfa	6,672	12,183
Fresh and prepared meat, sausages	24,652	10,403
Cotton cloth	5,642	10,240
All others	240,260	256,855
Total	869,729	800,473

COMMERCE. Hungary's foreign trade in 1927 was marked by an increase in the excess of imports over exports to more than four times the 1926 figure. While imports increased 21 per cent, to 1,146,797,000 pengos, exports declined 8 per cent, to 800,473,000 pengos. A great part of the increase in imports was attributed to the extensive building operations during the first three-quarters of the year. An even more important factor, however, was the generally in-

creased consumption of manufactured goods of all kinds, presumably because of the greater purchasing power of the country as compared with the previous year. The export trade failed to maintain the level of 1926. The proportion of raw material exported including unmanufactured foodstuffs to total exports declined from 70 per cent in 1926 to 64 per cent in 1927, with a corresponding increase in importance on the part of semi-manufactures and finished manufactures. Among the causes of this export decline were a smaller agricultural excess, the cessation in June of coal deliveries to Jugo-Slavia on reparations' account, and the high protection policy and certain import regulations of neighboring countries.

FINANCE. The Government budget for the fiscal year ended June 30, 1927, despite some tax reductions, closed with a considerable surplus which was used for capital investment. The accounts for State enterprises, although exactly balanced, actually closed with a surplus which was reinvested for the purpose of increasing their productivity. Total revenues for the fiscal year July 1, 1927, to June 30, 1928, were estimated at 1,192,421,960 pengos, and total expenditures at 1,192,255,320. For the 1928-29 year the revenues were estimated at 1,360,261,000 pengos and the expenditures at 1,357,804,000 pengos. Hungarian foreign long-term loans in 1927 totaled approximately \$48,000,000, of which more than \$34,000,000 were placed in the United States. The greater part of these loans went to public bodies, banks, and agricultural institutions. The total debt on Dec. 31, 1926, according to privately published sources amounted to \$426,605,000, of which \$235,325,000 represented pre-war debt.

COMMUNICATIONS. Of the 4382 miles of railroad line operated by the Government in 1924-25, 1881 miles were government owned. Only minor lines are privately operated.

STATISTICS OF GOVERNMENT-OPERATED RAILWAYS, YEAR ENDED JUNE 30

	1926
Length of line	4,418 miles..
Locomotives	1,935 number..
Passenger cars	2,751 do.....
Freight cars	31,834 do.....
Passengers carried	54,227 thousands..
Passenger miles	1,247 millions..
Freight carried	21,483 1000 metric tons..
Ton miles	1,525 millions..
Train miles	13,628 thousands..

The new commercial free port of Budapest, situated on Csepel Island, about 2½ miles below the city, was opened on Oct. 22, 1928. It comprises an area of about 1500 acres and has cost about \$4,500,000. It consists of two parts, the free port and the petroleum port. The free port has a length of 1000 meters and is about 150 meters wide. Barges can tie up along the wharves for a distance of about 2200 meters (7217.83 feet), and there is a depth of water of 2.6 meters (8.53 feet) above the low-water mark in this part of the Danube. The big grain elevator is here, comprising 14 floors, with a capacity for 45,000 tons of grain. The petroleum port is situated south of the free port, and comprises a basin 360 meters (1181.1 feet) long by 120 meters (393.7 feet) wide. This part of the port was finished four years ago, and during 1928 it handled about 70,000 tons of oil.

GOVERNMENT. Technically, Hungary is a constitutional monarchy with the throne vacant. When the Horthy rule came into power it was decided to keep the old constitution and let the question of who was to be monarch wait until the people were freed from external pressure. In the meantime Admiral Nicholas Horthy acted as regent. The ministry originally formed on June 27, 1922, was reorganized on Oct. 15, 1926, as follows: Prime Minister, Count Stephen Bethlen; Foreign Affairs, Dr. Louis Walko; Interior Dr. Béla Scitovsky; Finance, Dr. John Bud; Agriculture, John Mayer; Commerce, Maximilian Hermann; Public Instruction, Dr. Count Kuno Klebelsberg; Justice, Dr. Paul Pesthy; National Defense, Count Charles Csáky; Social Welfare, Dr. Joseph Vass.

HISTORY

A tempest in a teapot was caused in the early days of the year by the discovery of the shipment of several carloads of machine guns from Italy to Hungary. They were discovered at the station of St. Gothard in Austria and a storm was immediately aroused because of this evident violation of the terms of the treaty of Trianon. The Little Entente, fearing a rapprochement between Italy and Hungary, along the lines of Italy's economic penetration of the Balkans, demanded an investigation by the League of Nations. The matter, which was comparatively insignificant at the beginning loomed larger as time went on because Italy refused to sanction an investigation by the League and Hungary merely shrugged her shoulders and passed the matter over lightly. Hungary destroyed the troublesome guns, which the League Council desired as evidence, and when questioned concerning her action expressed surprise that the League should be interested in such an affair.

The demand for an investigation continued, however, and when France, Great Britain, and Germany came out strongly for such a move, Italy reluctantly consented, expressing at the same time her admiration and friendship for Hungary. Hungary reciprocated this admiration and friendship through the vehicle of the press and public demonstrations. The Italian press took the attitude that the Little Entente desired the aid of Great Britain and France, especially, to crush Hungary even further than the Treaty of Trianon had done.

As was to be expected from such an investigation, nothing really fruitful came of it. France, the chief backer of the Little Entente's demand for an investigation, did not care to push Italy too far, and although the entire world knew the facts in the case, the Council of the League pretended in its decision given out on June 7, that the evidence in the case had been destroyed and the actual destination of the guns could not be learned. It might be said in passing that Hungary stoutly maintained that the weapons were on their way to Poland and were merely in transit when discovered. The League saved some of its dignity by telling Hungary and, parenthetically, all other countries, not to repeat the offense and asserted its right to investigate such matters. Probably Mussolini smiled when he read the decision and probably, again, Count Bethlen, the Hungarian Premier, felt that his mission in life, the revision of the

Treaty of Trianon was much nearer consummation with such a strong ally as Mussolini on his side.

The other outstanding event in Hungarian history was the recurrence of the so-called "king question." As noted above under *Government*, Hungary was officially a kingdom with the throne vacant. On one or two occasions during the year, especially in answer to Socialist queries, Premier Bethlen reiterated this status of the Hungarian Government. It was reported at one time in the fall that a referendum would be held on the question of the election of a monarch. The matter was brought to the fore by the coming of age of Archduke Otto, the son of the late Emperor Charles. His followers were of course in favor of his accession to the throne, but Bethlen let it be known that he would oppose such action to the bitter end. This gave rise to the belief that the Hungarian Government favored the crowning of Archduke Albert, the son of the Hapsburg Archduke Frederick. Although there was considerable discussion, nothing was done concerning the selection of a king down to the close of the year. Count Bethlen fell back on his old excuse, i. e., that the time was not ripe for such action as yet. Needless to say, the Little Entente was bitterly opposed to any return of the Hapsburg, no matter what branch of the family. Such action was specifically condemned by the Treaty of Trianon, and it was stated in several quarters that, despite Mussolini's friendship for Hungary, he was not prepared to receive the return of the Hapsburgs with open arms. In the last week of the year several Hungarian Fascist leaders were arrested and charged with treason.

HURRICANES. See *HORTICULTURE*; *METEOROLOGY*.

HYDRO-ELECTRIC DEVELOPMENTS. See *WATER POWER*.

HYDROGEN, PEROXIDE. See *CHEMISTRY, INDUSTRIAL*.

HYDRO-METALLURGY. See *METALLURGY*.

HYDROPHOBIA. Dr. W. Schoening of the U. S. Bureau of Animal Industry has stated that wholesale vaccination of dogs against rabies has not proved 100 per cent effective. Several methods have been tested with the same result. This has become known through reports from State and city veterinarians of localities where vaccination has been on trial. Many dogs which have escaped the disease in infested regions owe their immunity to segregation and cannot be used for statistical purposes. But where compulsory vaccination has been in effect the number of cases of rabies has shown a decrease although it is difficult to decide as to what extent this is due to vaccination alone and how much to quarantining and destroying stray and suspected animals. Some figures appear to show that vaccination alone cannot be proved to have affected the number of cases of canine rabies.

IBAÑEZ, VICENTE BLASCO. See *BLASCO IBAÑEZ, VICENTE*.

IBERO-AMERICAN EXPOSITION. See *EXPOSITIONS*.

IBSEN, HENRIK, ANNIVERSARY. See *CELEBRATIONS*.

ICE CREAM. See *DAIRYING*.

ICE HOCKEY. See *HOCKEY*.

ICELAND. An island state united with Denmark in the person of the king by the act of union of Nov. 30, 1918. Area, variously esti-

mated at from 39,707 to 40,456 square miles; population according to the census of 1920, 94,690; estimated at the end of 1927, 100,000. The capital, Reykjavik, had a population of 23,000 in 1927. All the other towns had populations of less than 3000. The number of foreign-born inhabitants is very small and consists chiefly of Danes and Norwegians. The movement of population in 1926 was: Births, 2659; deaths, 1134; marriages, 623. Although religious freedom is complete, and to be a non-conformist entails no civil disability, there were only 463 dissenters from the endowed national church, the Evangelical Lutheran, at the census of 1920. Primary instruction is compulsory between the ages of 10 and 14, children up to the age of 10 being privately educated as a rule. According to the latest available statistics, there were 209 elementary schools, with 318 teachers and 6485 pupils; several continuation schools; and a university at Reykjavik. Only about one-fourth of 1 per cent of the area of the island is under cultivation, producing chiefly, hay, potatoes, and turnips. The crops in 1926 were: Hay, 3,548,000 cwt.; potatoes 66,000 cwt.; and turnips, 23,000 cwt. Livestock figures in the same year were: Horses, 52,800; cattle, 27,900; sheep, 590,000; and goats, 2800. The fisheries were valued at 46,791,000 crowns in 1925, of which the value of codfish was 43,378,000 crowns and herring, 3,413,000 crowns. According to the *Iceland Year Book* for 1928, the total exports in 1925 were valued at 78,640,218 crowns and the imports at 70,190,913. crowns.

Iceland's total exports during 1927 amounted to 57,500,000 crowns, as compared with 48,000,000 crowns in 1926, according to official statistics. Imports totaled 48,000,000 crowns as against 50,500,000 crowns in 1926. While the foreign trade of 1926 revealed an import surplus of 2,500,000 crowns, 1927 showed an export surplus of 9,500,000 crowns. Fish products represented 50,000,000 crowns, or about 87 per cent of the total exports in 1927, while 7,000,000 crowns, or 12½ per cent, covered agricultural products. Government finances of necessity have always been characterized by conservatism. During the late years of rapid economic development and disturbed conditions, budgetary expenditures in Iceland, as elsewhere, had risen appreciably. In the proposed budget for 1928, revenues were estimated at 10,452,000 crowns and expenditures at 10,454,000 crowns. The national debt of Iceland, after remaining at a very low figure until 1915, during the following years of war emergency rose very sharply, reaching in 1917 a record figure of nearly 20,000,000 crowns, or roughly 210 crowns per capita. Since 1917 a retrenchment had taken place and, as the result of vigorous efforts by the Government, especially during 1926 and 1927, the debt was reduced to 10,800,000 crowns. The merchant marine of Iceland in 1927 consisted of 316 vessels of 29,818 gross tons.

Executive power is vested in the King of Denmark who acts through a responsible ministry; and legislative power in the King and Althing or Parliament, which consists of 42 members, of whom six are elected for eight years, by proportional representation for the whole country, and 36 for four years by universal suffrage. The Althing is divided into two houses, of which the upper has 14 members and the lower 28. The right to vote is possessed by both men and women over the age of 25. King in 1928, Christian X; Presi-

dent of the Council and Minister of Trade and Communications, Tryggvi Thorhallsson; Justice and Ecclesiastical Affairs, Jonas Jonsson; Finance, Magnus J. Kristjansson. During the year there was considerable discussion throughout the island concerning the abandonment of the union with Denmark. All shades of opinion, including the Government, seemed to favor the proposition and hoped for its consummation before 1940.

IDAHO. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 431,866. The estimated population on July 1, 1928, was 546,000. The capital is Boise.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops, in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Hay	1927	1,148,000	2,766,000 *	\$30,123,000
	1928	1,115,000	3,313,000 *	28,433,000
Wheat	1927	1,160,000	28,792,000	25,913,000
	1928	1,171,000	32,374,000	31,570,000
Potatoes	1927	116,000	19,720,000	8,874,000
	1928	115,000	24,980,000	13,409,000
Oats	1927	137,000	6,439,000	3,091,000
	1928	143,000	6,721,000	3,860,000
Barley	1927	144,000	6,192,000	3,901,000
	1928	128,000	5,676,000	3,850,000
Dry beans	1927	32,000	1,476,000	5,314,000
	1928	72,000	1,707,000	4,265,000
Corn	1927	53,000	2,438,000	2,243,000
	1928	76,000	3,116,000	2,555,000

* tons.

MINERAL PRODUCTION. In all the metals of the gold, silver, copper, lead, and zinc group, the production in Idaho expanded considerably in 1927, as compared with 1926; but the lower prices obtained for the chief metal product, lead, and for silver, the second in importance, brought it about that the total value of production in 1927 in the five metals was lower than that obtained in 1926. This total was, for 1927, \$28,104,413; for 1926, \$30,969,551. Lead supplied about two-thirds of the total, in either case. The quantity of recoverable lead mined was, for 1927, 302,038,423 pounds; for 1926, 272,980,212. That of silver, 1927, 8,901,409 ounces; 1926, 7,556,444; of copper, 1927, 2,173,163 pounds; 1926, 1,337,442; of zinc, 1927, 53,556,345 pounds; 1926, 52,614,691. Gold production rallied moderately, to 15,315 fine ounces for 1927, from 13,669 for 1926. The values of the metals produced in 1926 were, respectively: Gold, \$282,569; silver, \$4,715,221; copper, \$187,242; lead, \$21,838,417; zinc, \$3,946,102. Save for stone, no other mineral was produced in considerable total. The entire mineral production of the State was, for 1926, \$31,752,821; for 1925, \$31,611,166.

The 1928 production of gold, silver, copper, lead, and zinc had an estimated value of \$27,231,000, and scored a gain over 1927. An electrolytic zinc plant was completed and put in operation at Kellogg. The gold production of the year was about \$410,000; that of silver 8,811,000 ounces, in value \$5,047,099; copper about 2,117,000 pounds, in value \$309,000; lead about 290,753,000 pounds, in value \$17,736,000; zinc recovered from ores and concentrates totaled about 60,369,000 pounds, in value \$3,622,000.

FINANCE. State expenditures in the year ended Sept. 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$5,135,756 (of which \$629,704 was aid to local education); for interest on debt, \$333,231; for perman-

ent improvements, \$3,163,260; total, \$8,632,247 (of which \$3,497,600 was for highways, \$846,705 being for maintenance and \$2,650,895 for construction). Revenue was \$8,160,495. Of this, property and special taxes furnished 28.9 per cent; departmental earnings and charges for officials' services, 5.6 per cent; sales of licenses and the tax on gasoline, 24.5 per cent. Property valuation was \$482,690,646; State taxation thereon, \$2,980,138. Net State funded debt on September 30, 1927, was \$4,783,106, chiefly highway debt.

TRANSPORTATION. The total number of miles of railroad line under operation in the State on Jan. 1, 1928, was 2898.72. There were built in 1928 20.6 miles of additional second track.

EDUCATION. Some initial work was done on the revision of the State course of elementary studies, and a modernized elementary course in language activities was introduced. The school-age population of the academic year 1927-1928 was put at 138,235. There were enrolled in the public schools in that year 120,846 pupils, of whom 97,073 were in the elementary schools and 23,773 in high schools. Expenditure for public school education totaled \$10,906,604.17.

CHARITIES AND CORRECTIONS. The central governmental agency of the State for the care of invalid and of defective dependents, as well as for the general care of public health, was in 1928 in the State Department of Public Welfare. It combined the duties of a board of health and of a board of institutional control. It supervised the Idaho State School and Colony, an institution for the feeble-minded; the Northern Idaho sanitarium for mental patients, at Orofino; the Idaho State Sanitarium, for the feeble-minded, at Nampa. A separate body, the State Prison Board, had charge of the State Prison, while an industrial training school was under the State Board of Education. Feeble-minded and epileptic inmates of the State School and Colony numbered 301 on Jan. 1, 1928.

POLITICAL AND OTHER EVENTS. Following the death of Frank R. Gooding, U. S. Senator from Idaho, John Thomas, a banker and cattleman, member of the National Republican Committee, was appointed to succeed him by Governor Baldridge, June 30. Complaint was made in March, at a meeting sponsored by the Wallace Board of Trade, of heavy State taxation, Chairman Robertson of the State chamber of commerce asserting that the property tax already formed an oppressive burden and could not be increased to defray cost of proposed old-age pensions, which had been brought forward in the previous session of the legislature. State finances, however, were in good condition, Governor Baldridge stating in a July 4 address that the State had investments of more than \$12,000,000, and that the total had increased in the previous eight years at the average rate of more than \$500,000 a year. Under a new certificate of title law applying to automobiles, the State Department in three months was reported to have issued more than 80,000 certificates to owners of motor vehicles. A spotted fever epidemic at Boise in April was combated with serum furnished by the Federal Health Service.

ELECTION. The State went solidly Republican in the election of November 6. The popular vote for President was: Hoover (Rep.), 97,322; Smith (Dem.), 52,926; Hoover's plurality, 44,396. Governor H. C. Baldridge was reelected; John Thomas, United States Senator by interim ap-

pointment was elected for the remainder of the term ending in 1933; the two members of the House of Representatives, both Republican, were reelected. Constitutional amendments to set terms of elective State officers at four years and to give the State power to limit water-power use of streams received favorable majorities in a referendum vote.

OFFICERS. Governor, H. C. Baldrige; Lieutenant-Governor, Oscar E. Hailey; Secretary of State, Fred E. Lukens; State Auditor, E. G. Gallet; State Treasurer, Byron Defenbach; Attorney-General, Frank L. Stephan; Superintendent of Public Instruction, Mabelle M. Lyman; Inspector of Mines, Stewart Campbell.

JUDICIARY. Supreme Court; William E. Lee, Alfred Budge, Raymond Givens, Herman H. Taylor, T. Bailey Lee.

IDAHO, UNIVERSITY OF. A coeducational, State institution of higher learning at Moscow, Idaho, founded in 1889, with the Southern Branch a junior college, at Pocatello, established by Act of the State legislature and opened in the autumn of 1927. The total enrollment at Moscow in the autumn of 1928 was 2109, of whom 797 were women and 1312 men, the distribution being as follows: College of letters and science, 687; college of agriculture, 128; college of engineering, 191; college of law, 23; school of mines, 49; school of forestry, 89; school of education, 354; school of business, 306; special courses, 42; and non-resident, 240. The total enrollment at the Southern branch was 531, of whom 225 were women and 306 men. The 1928 University summer session registration was 309, and the Southern Branch registration, 111. The faculty in 1928 numbered 153. The physical plant of the University was valued at \$2,807,000, and the valuation of the Southern Branch was placed at \$640,000, making a total of \$3,447,000. The productive funds of the University amounted to \$2,016,460, and the income for 1927-28 was approximately, \$1,250,000. The library contained 90,000 volumes. Building improvements during 1928 included a \$300,000 armory-gymnasium, in memory of Idaho's service men and women in the World War, and other wars, erected through the joint efforts of University alumni and the Idaho department of the American Legion. A science hall was erected on the campus of the Southern Branch, in addition to other building improvements valued at \$100,000. A forestry experiment station was established at the University, and two research men in forestry were added to the faculty; the position of assistant president was also created. The president, Frederick James Kelly, Ph.D., was inaugurated in June, 1928.

ILLINOIS. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 6,485,280. The estimated population on July 1, 1928, was 7,396,000. The capital is Springfield.

Chicago's population, late in 1926, was estimated on the basis of birth rates and school assessor's statistics as being 3,151,989, an increase of 16.7 per cent over the 1920 official census. The population of the metropolitan area of the city was estimated at 4,100,000. In 1928 the U. S. Bureau of the Census estimated the population of Chicago as of July 1, at 3,157,400.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops, in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Corn	1928	9,570,000	367,488,000	\$257,242,000
	1927	8,469,000	254,070,000	180,390,000
Hay	1928	3,105,000	4,091,000 ^a	52,649,000
	1927	3,590,000	5,334,000 ^a	60,658,000
Wheat	1928	1,568,000	24,200,000	27,143,000
	1927	2,509,000	34,844,000	41,696,000
Oats	1928	4,640,000	174,338,000	66,248,000
	1927	4,008,000	102,204,000	43,948,000
Barley	1928	680,000	20,060,000	10,632,000
	1927	453,000	13,364,000	9,756,000
Potatoes	1928	70,000	7,700,000	5,005,000
	1927	64,000	5,376,000	6,182,000

^a tons.

MINERAL PRODUCTION. The State, ranked seventh in order of yearly total mineral production in 1926, continued to derive this production chiefly from coal and iron. Coal production, however, fell considerably, to 46,848,224 net tons, for 1927, compared with 69,366,923 for 1926. Coal produced in 1927 had a value of \$101,356,000; in 1926, of \$148,604,000. The blast furnaces of the State produced, in 1927, 3,466,203 long tons of pig iron; in 1926 this product had totaled 3,626,330 long tons. The value of pig iron produced in 1927 was \$66,442,068; in 1926, \$73,460,392. The by-product coke industry declined slightly with the fall in coal production. There were produced in 1927, 2,986,000 short tons of coke, as against 3,336,962 in 1926, valued at \$25,050,474. The decrease in coal mining and closely allied industries was due to a strike in the coal fields. Clay products, the classification attaining the largest totals after the coal and iron group, yielded a total of \$37,030,004 for 1926, the latest year of record; for 1925, of \$36,763,980. There were produced in 1927 7,017,047 barrels of cement; in 1926, 6,747,241; cement shipments of 1927 had a value of \$11,312,783; those of 1926, \$11,388,800. Petroleum production was somewhat lower, being 7,024,000 barrels for 1927, as against 7,760,000 for 1926; in value, \$11,800,000 for 1927 (estimated), and for 1926, \$17,200,000. The total mineral production of the State was, for 1926, \$237,241,600; for 1925, \$231,658,604.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$44,037,302 (of which \$8,485,637 was for local education); for conducting public service enterprises, \$39,022; for interest on debt, \$5,944,465; for permanent improvements, \$20,768,850; total, \$70,789,639 (of which \$19,275,200 was for highways, \$2,556,918 being for maintenance and \$16,718,282 for construction). Revenue was \$79,483,126. Of this, property and special taxes formed 51.5 per cent; departmental earnings and charges for the services of officers of the State, 3.8 per cent; sale of licenses, 38.4 per cent. Assessed valuation of property was \$4,195,581,136; State taxation thereon, \$27,271,277. Net funded State debt was \$140,158,985. Of the outstanding debt \$91,013,000 was in highway bonds.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 12,004.17. There were built in 1928 126.83 miles of additional first track, 3.16 of second track, and 2.55 of third track; in all 132.54 miles of track, built by 4 companies.

EDUCATION. Increasing demand, especially in rural districts, for more thoroughly trained elementary teachers, was reported in the *Journal* of the National Education Association. The school-age population of the State was given, for

the academic year 1926-27, at 1,988,642. There were enrolled in the public schools 1,357,638 pupils. Of these, 1,106,383 were in the elementary schools and 251,255 in high schools. Of the elementary pupils, 59,628 were in kindergartens. Current expenditure of the year for public-school education averaged \$82.11 to the enrolled pupil; total expenditure, \$107.10. Public-school teachers numbered 45,293. Of these, 22,756 had had full college or State normal school courses. The salaries of all teachers averaged \$1589.30 a year; those of men teachers, \$1821.47; of women teachers, \$1536.96.

CHARITIES AND CORRECTIONS. The State had in its care or custody in June, 1928, 36,090 individuals in penal, reformatory, or charitable institutions under the direction of the State Department of Public Welfare. Among the institution inmates were 21,111 mental patients in nine State hospitals. These hospitals, with their respective populations for June 1, 1928, were those at Kankakee, 3885; Elgin, 2819; Jacksonville, 3110; Anna, 1839; East Moline, 1850; Peoria, 2671; Chester, 285; Chicago, 3258; Alton, 1394. The Lincoln State School and Colony (feeble-minded) had 2450, chiefly feeble-minded and epileptics; Illinois State School for the Deaf, Jacksonville, 425; School for the Blind, 236 enrolled pupils; Soldiers' Home, Quincy, 553; Research and Education Hospital, Chicago, 127; St. Charles School for Boys, St. Charles, 811; State Training School for Girls, Geneva, 510; Illinois State Penitentiary, Joliet, 3075; Illinois Woman's Prison, Joliet, 81; Southern Illinois Penitentiary, Menard, 1974; Illinois State Reformatory, Pontiac, 1399; Illinois State Farm, near Vandalia (for misdemeanants and for mitigated treatment of convicts), 369.

LEGISLATION. Two special sessions of the State Legislature were held in the year. The first, convening January 10, had for its purpose the amendment of the primary election law. The second, convening May 15, dealt with legislation to enable the city of Chicago to gain control of its traction lines.

POLITICAL AND OTHER EVENTS. The refusal of the United States Senate to seat Frank L. Smith, Republican Senator-elect from Illinois (see UNITED STATES; Legislation) drew from Governor Small on January 20 a bitter characterization of the Senate's course as an "unwarranted and outrageous proceeding fraught with most serious consequences to constitutional government." Smith became a candidate for the Republican nomination for the vacant Senatorship, and was opposed by State Senator Otis F. Glenn. The Deneen faction of the State Republican party not only supported Glenn but backed Louis F. Emmerson, secretary of state, against Small for the nomination for governor and Judge John A. Swanson to oppose the renomination of Robert E. Crowe as State's attorney. Emmerson, Small, and Swanson were all nominated by large Republican majorities in the State primary elections of April 10. The result was closely connected with the rise of sentiment against the Thompson administration in the city of Chicago, as the Thompson group had favored the defeated candidates. The campaign that preceded the primary election was attended in Chicago with a number of acts of violence, including bombing and shooting. Mayor Thompson shortly before the primaries was reported to have intimated that he would resign unless the

candidates that he supported should be nominated, but he nevertheless afterward continued in office.

The Supreme Court of Illinois rendered in March a decision invalidating the 2-cent gasoline tax as unconstitutional. The tax had been attacked by the Chicago Motor Club, chiefly on the ground of conflict with an earlier act which provided that all gasoline tax funds should be used for service on debt incurred in previous road construction. The decision was therefore not regarded as necessarily implying a likelihood of similar upsets of gasoline tax laws in other States. The Illinois Association for Criminal Justice, working in concert with the Chicago Crime Commission, recommended in June that the State abolish the grand jury system, and resort to the institution of criminal process by information. Hanging as the legal mode of execution ceased and was replaced by the electric chair, the last person hanged being Charles Birger, murderer of Mayor Adams of West City, who was executed April 19. Digging of the Ozark Tunnel, a 3-mile tunnel of the Southern Illinois & Kentucky Railroad near Ozark in Pope County, said to be the longest in the Middle West, was completed in April.

The coal mining industry of the State continued unsettled for the greater part of the year. Following the indefinitely phrased settlement of the bituminous coal strike of 1927, mines in Illinois as in others of the Central States reopened, but on April 1 there followed a general movement to reduce the rate of wages below the level of the Jacksonville agreement and cessation of work in the mines was widespread. After the action of the central body of the United Mine Workers in July, releasing locals to make the best terms that they could, negotiations for separate wage scales proceeded. See COAL.

In Chicago the proceedings of the Thompson administration to remove School Superintendent McAndrew, accused of pro-British teachings, were carried on with much delay, until he was declared ousted March 21, more than two months after the expiration of his contract of employment. The proceeding was severely criticized by educators and civic bodies as tending to render education subordinate to control by politicians. It played a part in stirring the voters to repudiate the group holding authority in Chicago and in the State offices, at the primaries of April 10. After the political upset of April there followed a wave of investigation into city affairs. The Illinois Association for Criminal Justice issued May 20, a review of the relations of politics and criminality in Chicago, in which it declared the city to be ridden by organized gangs furnishing protection to illegal forms of traffic and themselves generally immune from action on the part of the public authorities during several previous city administrations. The gangsters and their protectors were asserted to be making gains of about \$13,500,000 a year.

The Chicago Crime Commission at the end of April made a public demand for the removal of three judges serving on the criminal court bench, alleged to have aided defendants to avoid conviction on felony charges. The Chicago Bar Association on May 9, demanded that a special Grand Jury inquire into charges of irregularities at the April primaries. The proposal was broadened to include a further grand jury inquiry into vice and crime conditions in the city, and a

fund was raised by private subscription to meet the expense of grand jury proceedings. The grand jury investigation of the primary brought indictments against about 40 persons for acts of terrorism and other forms of illegality at the polls. An inquiry into payment of city funds to real estate experts during the previous Thompson administration resulted in a court order for the repayment to the city of \$1,700,000 of the money thus disbursed. The city comptroller and the police commissioner resigned in July. Six grand jury investigations into civic matters were held, in all, up to December. That of November found indication of the participation of police captains in fraud conspiracy in the April election and recommended the formation of a metropolitan police force under a commissioner to hold office for ten years, independent of change in the city administration. A deficit of about \$12,000,000 in the budget of the Chicago school system was reported November 27, and difficulty arose in effecting further temporary borrowing to keep the school system in operation for the remainder of the fiscal year.

ELECTION. In the National election of November 6 for President, the State gave Hoover (Rep.) 1,768,141 votes; and Smith (Dem.) 1,313,817. The Republican plurality, however, was but approximately half those rendered the Republican National tickets in 1924 and 1920. The number of Republican votes cast was actually higher than in either of these years, while the vote for the Democratic presidential candidate was more than double what it had been on the two previous occasions. The greater part of the Democratic gain was scored in Cook County, including Chicago, where there existed much opposition to Prohibition and to the manner of its enforcement. Chicago rendered a slight Republican plurality, the chief part of the Republican majority being obtained outside of the city.

Otis F. Glenn, Republican nominee, was elected United States Senator, defeating A. J. Cermak, Democrat, who however, carried Chicago. The State delegation in the House of Representatives was reelected with three exceptions: Mrs. Ruth Hanna McCormick, Republican, was elected Representative-at-large; O. De Priest, colored Republican, won the seat of the late Martin B. Madden in the First District; and F. M. Ramer, Republican, was elected in the 21st District. Ramer alone succeeded a Democrat. The Republican nominee for Governor, Louis L. Emmerson, was elected over Floyd E. Thompson, Democrat, by a very substantial plurality. The strife within the Republican State organization, which had produced great bitterness at the time of the primary elections, did not prevent the polling of a very large Republican vote. Substantial majorities were reported as having been obtained by all the Republican candidates for the State offices. Fred E. Sterling was elected lieutenant-governor; William J. Stratton, secretary of State; Oscar Nelson, auditor; O. N. Custer, State treasurer; Oscar E. Carlstrom, attorney-general; F. G. Blair, superintendent of public instruction. A referendum proposition for the approval of an issue of \$20,000,000 of State bonds for the acquisition of State hunting and fishing preserves was carried by a large favorable vote.

OFFICERS. Governor, Len Small; Lieutenant-Governor, Fred E. Sterling; Secretary of State, Louis L. Emmerson; Treasurer, G. D. Kinney; Auditor, Oscar Nelson; Superintendent of Public

Instruction, Francis G. Blair; Attorney-General, O. E. Carlstrom.

JUDICIARY. Supreme Court: Chief Justice, Oscar E. Heard; Associate Justices; Floyd E. Thompson, Warren W. Duncan, Frank K. Dunn, William M. Farmer, Frederic R. DeYoung, and Clyde E. Stone.

ILLINOIS, UNIVERSITY OF. A coeducational State institution of higher education at Urbana-Champaign, Ill.; founded in 1867. The enrollment in the autumn of 1928 was 12,150, of whom 8944 were men and 3206 were women, distributed among the several colleges as follows: Liberal arts and sciences, 4129; commerce and business administration, 1822; education, 899; engineering, 1695; agriculture, 642; music, 125; journalism, 51; law, 436; library, 103; graduate school, 882; medicine, 503; dentistry, 207; pharmacy, 656. The 1928 summer session enrollment was 2270, of whom 1381 were men and 889 were women. The number of those on the teaching staff above the rank of assistant was 743; in the grade of assistant or lower there were 418; and administrative officers totaled 26. The library contained 762,187 volumes and 160,560 pamphlets. The productive funds from Federal endowment totaled \$649,013, and from private gifts, \$116,000. The income for the year 1927-28 was \$7,730,842, of which \$5,722,113 was from the State. During 1927-28 a building for architecture and kindred arts was constructed and an addition was made to the library; and a laboratory of applied mechanics and an addition to Lincoln Hall were under construction. President, David Kinley, Ph.D., LL.D.

ILLINOIS WATERWAY. See CANALS.

ILLUMINATION. See ELECTRIC LIGHTING.

IMMIGRATION. During the fiscal year 1927-28 the Congress of the United States passed three laws that were of importance in the regulation of immigration. On March 31 there was passed a law for the postponement of the national-origins quota plan until 1928; on April 2 an act was passed allowing Indians born in Canada to cross the border into the United States; on May 29 an act was passed changing to some extent the preference classes under the quotas with the end in view of facilitating the union of families separated by the coming of the bread-winner to the United States.

The Secretary of Labor's annual report contained the following immigration statistics for the fiscal year 1927-28: In that period 500,631 aliens were admitted into the country and 274,356 aliens departed. About three-fourths of the immigrants admitted were in adult life, i.e., between 16 and 44 years of age. The male immigrants outnumbered the female, the figures being 165,977 males and 141,278 females. Immigrants from the Western Hemisphere numbered almost half of those admitted. For example, the Mexicans and Canadians who came into the country in the fiscal year ending June 30, 1928, made up 43 per cent of all the immigrants admitted during the year. There were 73,154 Canadians and 59,016 Mexicans. Europe sent 158,513 immigrants, the following countries being represented in the fashion indicated: Germany, 45,778; Irish Free State, 24,544; Great Britain, 19,958; Italy, 17,728; Scandinavian countries, 16,184.

During the same period the Immigration Service was responsible for the deportation of 11,625 undesirable aliens. Of this number, 5021 were sent back to Europe, 2511 to Canada, 2934 to

Mexico, 532 to other countries of the Western Hemisphere, 529 to Asia, and 98 to Africa, Australia, and the islands of the Pacific. During the year 7996 Chinese were admitted to the country of whom 931 were immigrants and 7065 non-immigrants. The department was finding that the most important problem in connection with Chinese immigration was not the admission of aliens but the admission of those Chinese who claimed a legal right to entry on the score of citizenship, i. e., that they were the children of American-born Chinese. During the fiscal year 3276 such Chinese applied for admission. With regard to grandchildren of Chinese born in this

glers of aliens. Of the total 871 persons were turned over to the Customs Service; 105 persons to the Prohibition Unit; 533 to State and municipal authorities; and 124 persons to other branches of the Government. The Secretary of Labor said of the border patrol: "It is the greatest deterrent of alien smuggling that has ever been devised; and besides its activities devoted to immigration ends, it has made a substantial contribution to the cause of law enforcement in other departments of the country, notably the prohibition and customs units." The following tables are extracted from the report of the Secretary of Labor for 1928.

INCREASE OR DECREASE IN POPULATION, BY ADMISSION AND DEPARTURE OF ALIENS, DURING THE YEAR ENDED JUNE 30, 1928, BY RACE OR PEOPLE, SEX, AND AGE

Race or people	Aliens admitted			Aliens departed			Increase (+) or decrease (-)
	Immigrant	Non-immigrant	Total	Emigrant	Non-emigrant	Total	
Total	307,255	193,376	500,631	77,457	196,899	274,356	+ 226,275
African (black)	956	2,698	3,654	789	1,556	2,345	+ 1,309
Armenian	1,062	253	1,315	47	107	154	+ 1,161
Bohemian and Moravian (Czech)	1,248	1,109	2,357	1,327	1,884	3,211	- 854
Bulgarian, Serbian, and Montenegrin	531	664	1,195	1,396	832	2,228	- 1,033
Chinese	931	7,065	7,996	4,300	5,057	9,357	- 1,361
Croatian and Slovenian	938	909	1,847	584	441	975	+ 872
Cuban	2,058	6,533	8,591	1,232	7,008	8,238	+ 303
Dalmatian, Bosnian, and Herzegovinian	95	180	275	381	764	1,125	- 850
Dutch and Flemish	2,880	3,723	6,603	1,084	3,896	4,980	+ 1,623
East Indian	38	155	193	106	107	213	- 20
English	33,597	41,500	75,097	8,780	49,660	58,440	+ 16,657
Finnish	544	1,350	1,894	647	2,113	2,760	- 866
French	17,963	8,380	26,343	1,915	8,615	10,530	+ 15,813
German	54,157	22,188	76,345	8,068	20,272	28,358	+ 47,987
Greek	2,548	2,919	5,467	2,525	1,829	4,354	+ 1,113
Hebrew	11,639	3,737	15,376	253	1,698	1,951	+ 13,425
Irish	38,193	7,107	45,300	1,649	7,476	9,125	+ 36,175
Italian (north)	2,653	5,160	7,813	1,626	3,158	4,784	+ 3,029
Italian (south)	16,087	17,588	33,675	15,334	14,600	30,434	+ 3,241
Japanese	522	7,190	7,712	1,055	9,614	10,669	- 2,957
Korean	22	48	70	39	64	103	- 33
Lithuanian	326	341	667	351	403	754	- 87
Magyar	1,112	2,051	3,163	1,024	1,521	2,545	+ 618
Mexican	57,765	3,857	61,622	3,873	9,198	13,071	+ 48,551
Pacific Islander	2	10	12	3	9	12	.....
Polish	4,238	2,308	6,546	3,046	2,762	5,808	+ 738
Portuguese	844	2,398	3,242	1,430	1,977	3,407	- 165
Rumanian	443	562	1,005	908	928	1,836	- 831
Russian	1,249	1,265	2,514	642	1,121	1,763	+ 751
Ruthenian (Russniak)							
Scandinavian (Norwegians, Danes, and Swedes)	411	91	502	59	90	149	+ 353
Scotch	18,664	11,359	30,023	3,767	12,170	15,937	+ 14,086
Slovak	23,177	11,513	34,690	2,268	10,053	12,321	+ 22,369
Slovenian	2,197	1,294	3,491	746	711	1,457	+ 2,034
Spanish	1,018	6,635	7,653	2,578	6,385	8,963	- 1,310
Spanish American	3,490	4,691	8,181	1,720	4,854	6,574	+ 1,607
Syrian	613	660	1,273	232	457	689	+ 584
Turkish	143	186	329	116	135	251	+ 78
Welsh	1,723	942	2,665	85	518	603	+ 2,062
West Indian (except Cuban)	394	2,104	2,498	785	2,132	2,917	- 419
Other peoples	484	653	1,137	189	726	915	+ 222
SEX							
Male	165,977	115,973	281,950	54,786	118,678	173,464	+ 108,486
Female	141,278	77,403	218,681	22,671	78,221	100,892	+ 117,789
AGE							
Under 16 years	49,680	10,172	59,852	3,500	10,201	13,701	+ 46,151
16 to 21 years	73,092	10,508	83,600	3,176	10,835	14,011	+ 69,589
22 to 29 years	95,727	44,453	140,180	16,977	45,808	62,285	+ 77,895
30 to 37 years	42,642	47,735	90,377	20,841	48,685	69,526	+ 20,851
38 to 44 years	19,371	32,301	51,672	15,124	33,552	48,676	+ 2,996
45 years and over	26,743	48,207	74,950	17,839	48,318	66,157	+ 8,793

country and whose fathers had not been in America prior to the birth of the applicants the Supreme Court (in *Chin Yow v. United States*) has ruled that citizenship does not exist.

BORDER PATROL. PREVIOUS YEAR BOOKS have spoken of the creation of this arm of the Immigration Service. By the end of the fiscal year 1928 it had a personnel of 747 members and had spent \$1,600,000. During the year this patrol apprehended 25,534 persons engaged in questionable activities, of whom 18,000 were found to be smuggled aliens and 330 were found to be smug-

MEXICAN IMMIGRATION. The Box-Harris bills for the restriction of Mexican immigration brought this question to the attention of the American people once more. Students of the question put the number of Mexicans in the United States at between one and two millions with 1,200,000 a conservative figure. Mexicans had become integral parts of the life of the States of Texas, Arizona, and California and to a lesser extent of New Mexico, Colorado, and Kansas. The Mexican grows onions in Texas, cotton in Mississippi, beet sugar in Nebraska, and lima beans,

walnuts, and citrus fruits in the Imperial Valley. The Mexican had become indispensable to railroad operation in the United States and the railroads had consistently opposed the restriction of Mexican immigration. Another characteristic of Mexican labor was that it was seasonal, so that the winter months find Mexicans congregating in such cities as Los Angeles, San Antonio, and El Paso. While one group in the southwest was calling for the restriction of Mexican immigration (Representative Box was from Texas), another was demanding that the prevailing restrictions, i.e., head taxes and visa fees, be lifted. There is no question that the prevailing fees were limiting Mexican immigration. In 1928 an adult Mexican had to pay \$18 to cross the frontier—\$10 for a visa and \$8 for a head tax. In 1924, 89,339 Mexicans entered the country as against 32,378 in 1925 and 69,685 in 1927. The proponents of Mexican immigration insisted that the Mexicans were doing certain necessary menial tasks, that they were orderly and that they returned to Mexico. The opponents of the group sought their presence in this country on the grounds of racial purity: Mexicans had too large families, they were of low intelligence, they were the recipients of charity. (That they had to resort to charity because they were economically exploited, did not occur to these sociologists.) The Secretary of Labor was strenuously opposed to the free admission of Mexicans (as well as all other residents of the Western Hemisphere) on the grounds that they were furnishing cheap labor to compete with organized American workmen. On the other hand, the Secretary of State was a consistent opponent of any attempt to restrict immigration from the Western Hemisphere, particularly of Latin America, because if the effect this would have on the prevailing friendly relations between the country and its Latin-American neighbors.

NATIONAL ORIGINS PLAN. It will be recalled that the immigration law of 1924 called for the fixing of the total number of immigrants at 150,000 annually, three years after its enactment, and that quotas were to be reapportioned on the basis of the "national origins" of the population in 1920. A National Origins Commission was created made up of the Secretaries of Commerce, Labor, and State, but twice Congress had deferred putting the provision into operation because of the inability of the Commission to agree on a table of national origins. There can be no question that the preparation of a table showing the national origins of the present population must be attended with great difficulties. For one, as Dr. Joseph A. Hill, the expert of the Commission pointed out, intermarriage had succeeded in mixing the population pretty badly.

To indicate the task before the Commission, it is interesting to note a few of the things that had to be done before a table could be prepared. The Commission first analyzed the number of immigrants from the records of immigration from 1820 to date; it analyzed the decennial census from 1850 to 1900; it made a classification of the racial stock of the white population in 1790; the white population of the country was divided into two divisions: one representing the population descended from the original white population of 1790, and the other representing the population descended from, and consisting of, immigrants who have come into this country since 1790. In March, the Senate by a unanimous

vote and the House by a large majority, voted to defer once more the presidential proclamation announcing the use of the national origins basis for immigration quotas.

The table that follows is from the presidential order that was postponed. Column A gives the national origins quotas as arrived at in 1928. Column B gives the national origins quotas recommended in 1927. Column C gives the quotas as they were under existing law. The total figure for Column A is 153,685; for Column B, 153,541; for Column C, 164,867.

<i>Nation</i>	<i>A</i>	<i>B</i>	<i>C</i>
Austria	1,639	1,485	785
Belgium	1,328	410	512
Czechoslovakia	2,726	2,248	3,073
Denmark	1,234	1,044	2,789
Finland	568	559	471
France	3,308	3,827	3,954
Germany	24,908	23,428	61,227
Great Britain and Northern Ireland	65,894	73,039	34,007
Greece	312	267	100
Hungary	1,181	967	473
Irish Free State	17,427	13,862	28,567
Italy	5,989	6,691	3,845
Lithuania	492	494	344
Netherlands	3,083	2,421	1,648
Norway	2,403	2,267	6,453
Poland	6,090	4,978	5,982
Rumania	311	516	603
Russia	3,540	4,781	2,248
Spain	305	674	131
Sweden	3,899	3,529	9,561
Switzerland	1,614	1,198	2,081
Turkey	233	233	100
Jugo-Slavia	739	777	671

It should be pointed out that the Secretary of Commerce was dubious of ever working out quotas on the basis of national origins while the Secretary of Labor spoke frequently in favor of the scheme. In view of the fact that the Secretary of Commerce, Mr. Hoover, became the President-elect, it was doubtful if the scheme would be pressed.

PRESIDENTIAL CAMPAIGN. Both Secretary Hoover and Governor Smith, in their speeches of acceptance, gave attention to the problem of immigration. They agreed that the separation of families should be checked and that the total number of immigrants to be admitted yearly should remain as at present. But they disagreed on the basis for quota fixing. Secretary Hoover was in favor of the existing law based on the number of natives of each country already in America in 1890. Governor Smith said plainly: "... I am opposed to the principle of restriction based upon the figures of immigrant population contained in a census 38 years old." But the Governor did not indicate what census he was prepared to base quotas on. During the campaign Republican speakers insisted that the Democratic candidate was in favor of unrestricted immigration and though he denied the imputation several times the rumor nevertheless persisted throughout the contest for votes.

REGISTRATION OF ALIENS. Previous YEAR BOOKS have told of the unsuccessful attempts on the part of the Secretary of Labor to induce Congress to grant him the authority to register all aliens in the country, with a view toward discovering the 1,000,000 persons residing unlawfully. It appeared, however, that the Secretary of Labor was effecting practically the same thing through the passports that all aliens, entering after July 1, 1928, must carry. These identifications were obtained from the consuls at the ports of embarkation. The Secretary of Labor always

championed such a system on the ground that it would give the alien an easy method of identifying himself, particularly for citizenship purposes. But what of persons who entered before July 1, 1928, and who, therefore, did not require identification certificates? Critics pointed out that one of the ways of checking the smuggling of aliens was by a closer surveillance at ports of entry rather than nuisance regulations of the kind that the Secretary of Labor had in mind.

See also articles on LABOR, AMERICAN FEDERATION OF; JEWS.

IMPORTS. See articles on various countries and special articles such as AGRICULTURE; CORN; IRON AND STEEL; ETC.

INCINERATION. See GARBAGE AND REFUSE DISPOSAL.

INCOME TAX. See TAXATION.

INDEPENDENT METHODIST CHURCH. See METHODISTS, WESLEYAN.

INDEX NUMBERS. See FINANCIAL REVIEW; STATISTICS.

INDIA. A dominion of Great Britain, consisting of the peninsula of Hindustan and the region to the north, and including in addition to the territory directly governed by British officials, Indian states indirectly governed, that is to say, subject to British law. The capital is Delhi.

AREA AND POPULATION. The total area, including the Indian states and agencies which are in political relations with the Government, according to the census of 1921, was 1,805,332 square miles, of which 1,094,300 square miles were in the British provinces. The total population in 1921 was 318,942,480 as compared with 315,156,396 in 1911. The population of the British provinces in 1921 was 247,003,293 as compared with 243,933,178 in 1911. In 1923 the census commissioner for India estimated the population at about 319,000,000 or a gain of 1.2 per cent over 1911; average density, 177 to the square mile; maximum provincial density, 608 to the square mile in the Province of Bengal. Over 90 per cent of the population were classed as rural, only 9½ per cent living in towns of 5000 or more.

The following table from the *Statesman's Year Book* for 1928 gives the area and population of all the divisions of India according to the census of 1921:

<i>British Provinces</i>	<i>Area in square miles in 1921</i>	<i>Population in 1921</i>
Ajmer-Merwara	2,711	495,271
Andamans and Nicobars	3,143	27,066
Assam	53,015	7,606,230
Baluchistan	54,228	420,648
Bengal	76,843	46,695,526
Bihar and Orissa	83,161	34,002,189
Bihar	42,236	23,380,288
Orissa	13,736	4,968,873
Chota Nagpur	27,065	5,653,028
Bombay (Presidency)	123,621	19,348,219
Bombay	77,035	16,012,342
Sind	46,506	3,279,377
Aden	80	56,500
Burma	233,707	13,212,192
Central Provinces and Berar	99,876	13,912,760
Central Provinces	82,109	10,837,444
Berar	17,767	3,075,316
Coorg	1,582	163,888
Delhi	593	488,188
Madras	142,260	42,318,985
Northwest Frontier Province	13,419	2,251,340
Punjab	99,846	20,685,024
United Provinces	106,295	45,375,787
Agra	82,137	33,209,145
Oudh	24,158	12,166,642
Total provinces	1,094,300	247,003,293

The following Indian states and agencies were in political relations with the Indian Government at the time of the 1921 census:

<i>State or Agency</i>	<i>Area in square miles in 1921</i>	<i>Population in 1921</i>
Assam (Manipur) State	8,456	384,016
Baluchistan States	80,410	878,977
Baroda State	8,127	2,126,522
Bengal States	5,434	596,926
Bihar and Orissa States	28,648	3,959,669
Bombay States (including States in Western India Agency) ..	63,453	7,409,429
Central India Agency	51,531	5,997,023
Central Provinces States	31,176	2,066,900
Gwalior State	26,357	3,186,075
Hyderabad State	82,698	12,471,770
Kashmir State	84,258	3,320,518
Madras States Agency	10,696	5,460,312
Mysore State	29,475	5,978,892
Northwest Frontier Province (Agencies and Tribal areas) ..	25,500	2,825,136
Punjab States Agency	37,059	4,416,036
Rajputana Agency	128,987	9,844,384
Sikkim State	2,818	81,721
United Provinces States	5,949	1,134,881
Total States	711,032	71,939,187
Total India	1,805,332	318,942,480

RELIGION, ETC. The enumeration of the population in 1921 was: Hindus, 216,734,586; Moslems, 68,735,233; Buddhists, 11,571,268; Animistic, 9,774,611; Christians, 4,754,064; Sikhs, 3,238,803; Jains, 1,178,596; Parsis, 101,778; Jews, 21,778. The preponderating languages are Hindu, Bengali, and Telugu. Cities of over 250,000, with their populations in 1921 are: Calcutta (with suburbs), 1,327,547; Bombay, 1,175,914; Madras, 526,977; Hyderabad, 404,187; Rangoon, 341,962; Delhi, 304,420; Lahore, 281,781; and Ahmedabad, 274,007.

EDUCATION. There are two kinds of schools in India, namely, those which meet certain requirements of the Government, known as "recognized schools" and those which do not, known as "unrecognized schools." The recognized schools may be under public or private management. The schools are divided into English and vernacular schools and consist of primary and secondary grades. There were in India in 1925-26, 203,110 recognized schools with 9,892,703 scholars and 24,726 unrecognized with 621,618 scholars. In the same year there was spent on education 227,792,532 rupees, a sum representing less than 10 cents per capita. Notwithstanding sincere and earnest effort, little real advancement has been made in the education of the masses. Of the country's vast population it was stated by competent authority that more than 90 per cent is illiterate.

PRODUCTION, ETC. In the British provinces in 1925-26 there were 304,811,000 acres of arable land (43 per cent of the total); 1,471,000 acres of trees, shrubs, and bushes; 86,934,000 acres of forests; 151,869,000 acres of uncultivated productive land; and 150,187,000 acres of unproductive land. In India the monsoon, which lasts from June to September, is the chief controlling factor in crop production. The crops harvested during the "winter" (around February) are rice, sugar cane, castor beans, and ground nuts. Wheat, rape, and mustard are gathered in the spring, and sesame is harvested in the fall. There are two crops of cotton; one in April and one in October. Toward the end of the year it was reported that the Indian monsoon which had finished its cycle for 1928 was, on the whole, satisfactory, but its

distribution was not especially general and several districts were complaining of insufficient rainfall.

The real wealth of India lies in its soil. The climate ranging from tropical to temperate, favors the production of a wide variety of agricultural products. Vast irrigation projects, moreover, are bringing more area into production each year. In the case of jute, India has a practical monopoly. It is second as a world cotton producer, and ranks high in the production of wheat, sugar cane, rice, tea, nuts, and a number of other agricultural commodities. The acreage and production of the principal crops in 1927-28 season were as follows: Wheat, 31,089,000 acres, 334,059,000 bushels; rice (rough), 77,790,000 acres, 2,114,000,000 bushels; sugar cane, 2,954,000 acres, 3,221,000 long tons; oilseeds, 17,873,000 acres, 3,250,000 long tons; cotton 23,812,000 acres, 2,192,000,000 pounds; jute, 3,371,000 acres, 4,092,000,000 pounds; and indigo, 3,002,000 acres, 1,254,000 pounds. See AGRICULTURAL EXTENSION WORK; COTTON.

The report of the Indian Royal Commission on agriculture, covering nearly 900 pages, was issued on June 27, 1928, and included the following recommendations: (1) The establishment of an imperial council on agricultural research, with a fund of 5,000,000 rupees; (2) the promotion of land mortgage banks with the assistance of the Government; and (3) the establishment of regulated markets as a means of solving the marketing problems of the cultivators. According to the report, the commission was firmly of the opinion that coöperative credit is the only means of financing agriculture on sound lines, and stated that the greatest hope for the salvation of the rural masses from their crushing burden of debt rests in the growth of a well-organized coöperative movement.

The coöperative movement in India was making comparatively rapid progress despite the many handicaps to be overcome. At the end of 1926-27 there were in India 89,071 societies with a membership of 3,422,000, and a total capital of 679,400,000 rupees. With 199 rupees per member, capital was apparently increasing faster than membership. Bengal claimed 33 societies per 100,000 inhabitants, compared with 26.4 for Bombay and 31.6 for Madras. In Bengal the coöperative movement has grown rapidly, and appears to have changed the outlook of the people and strengthened their economic position. The department of commercial intelligence stated that with more expert guidance progress would be greater.

Indian manufactures continued to make progress in the coarser grades of articles which required little skill and which were in greatest demand in the domestic market. Though still depending on tariff protection, textile manufacturers had formed ambitious programmes for extending sales to foreign markets. According to the industrial census of 1921, the total number of persons employed in mines and factories was 2,681,125, distributed as follows: On tea plantations, 747,661; in mines, 266,743; in quarries, 27,234; in the manufacture of cotton textiles, 433,896; of jute, 310,511; in metal industries, 169,693; in glass and earthenware industries, 82,020; in the manufacture of chemical products, 109,157; in food industries, 109,868; in railway shops, 112,532; and in printing, 49,378.

During 1927 considerable labor unrest was experienced in India and 129 strikes occurred, in-

volving 131,655 men and a loss of 2,019,970 working days. During 1926 more men were involved, but only about one-half as many days were lost. This large increase in days lost was incident largely to two prolonged strikes in the Bengal-Nagpur Railway shops, which resulted in 880,218 idle working days. Difficulties in cotton and jute mills accounted for the bulk of the remaining days lost. Bombay reported 54 disputes, involving 28,078 men and a loss of 165,061 working days, while Bengal reported 34 disputes, involving 66,674 men and a loss of 1,464,889 days.

COMMERCE. India's importance in world trade is not generally realized outside of foreign trade circles. In the aggregate value of its foreign trade it ranks among the first seven countries of the world, being exceeded regularly by only the United Kingdom, the United States, France, and Germany, and usually, but not always, by Canada and Japan. In exports India ranks after the four leading countries, contesting with Canada and Japan for fifth, sixth, or seventh place. As an importer India usually vies with Belgium for tenth place. Considering the relative poverty of India's population, it is astonishing to find the country occupying such a high place among trading nations. There are several reasons for this large trade—the principal one, perhaps, that the country is so largely agricultural.

Much has been heard lately of India's industrial progress, but about two-thirds of the population was still directly supported by agriculture and cattle raising, and if those dependent indirectly upon the products of the soil were included, the total would probably reach nine-tenths. Being almost entirely agricultural, it must seek its manufactured goods abroad, and, in order to purchase from abroad, it must necessarily produce a surplus of raw materials for export—hence the large foreign trade.

TRADE BY PRINCIPAL GROUPS OF COMMODITIES
[Thousands of Dollars]

	Group	1926-27
General imports *		988,283
Food, drink, and tobacco		139,070
Raw materials and produce and articles		
mainly unmanufactured		74,336
Articles wholly or mainly manufactured		610,109
Live animals		1,517
Postal articles not specified		13,486
Gold and silver, bullion and specie *		149,765
Domestic exports		1,089,967
Food, drink, and tobacco		270,297
Raw materials and produce and articles		
mainly unmanufactured		502,720
Articles wholly or mainly manufactured		309,247
Live animals		1,389
Postal articles not specified		9,051
Gold and silver, bullion and specie *		7,263

* Including currency notes since 1922-23.

The value of imports of merchandise during the calendar year 1927 rose to \$896,421,000 from \$849,032,000 during 1926, while the value of exports, including reexports, fell from \$1,195,144,000 to \$1,186,429,000. The favorable balance of trade was \$289,354,000 for 1927 against \$346,770,000 for 1926. Imports from the United States during 1927 reached the value of \$81,148,000 as compared with \$62,197,000 during 1926. The largest increase occurred in imports of raw cotton with smaller increases in machinery and electrical equipment, automotive products, leather, refined copper, and leaf tobacco. A tendency for imports to become more varied was noticeable. The share of the United States in the

imports of India had risen markedly in recent years. Exports to the United States, which in most recent years had increased, declined from \$130,924,000 during 1926 to \$127,039,000 during 1927, owing to smaller shipments of jute products, crude rubber, and shellac. Exports of castor beans, tea, wool rugs, and manganese ore were larger in quantity than during 1926.

FINANCE. During five years India's finances had prospered. Budget deficits were turned into surpluses, provincial contributions had been abolished, the cotton excise duty had been removed, and the rupee had been stabilized. The revised budget of 1926-27 estimated a surplus of 26,300,000 rupees and the budget estimates for 1928-29 anticipated a surplus of 26,300,000 rupees. Government securities were in good demand in 1927, both on the domestic market and abroad. The public debt of the Government of British India, including that incurred in behalf of the provincial governments, amounted on March 31, 1927 to 9,755,400,000 rupees, equivalent at par to \$3,560,721,000. Of this total 7,738,300,000 rupees was contracted for productive purposes, principally for railways and irrigation, and of this productive debt 1,194,100,000 rupees was incurred in behalf of the provincial governments. The per capita debt was about 31 rupees or \$11.30.

COMMUNICATIONS. A decided improvement was shown in railway earnings during 1927. Car loadings of all principal commodities, except raw cotton, were larger. Additions to lines totaled 421 miles in 1926-27, and several important new lines were commenced. Construction of 7000 miles of line during the five years ending March 31, 1932, was planned. The total length of line on March 31, 1927, was 39,049 miles, of which 28,004 miles were Imperial State lines and 11,045 miles belonged to Indian States and private companies.

STATISTICS OF RAILWAYS, YEARS ENDED
MARCH 31

	1926	1927
Length of line, total miles..	38,579	39,049
Length of tracks do..	52,079	52,886
Locomotives number..	9,991	9,873
Passenger cars do..	26,005	26,469
Freight cars do..	226,766	230,839
Average capacity . . long tons..	17.8	18.0
Passengers carried . . thousands..	627,557	631,972
Passenger miles millions..	20,332	20,366
Freight carried .1000 long tons..	106,351	112,966
Ton miles millions..	19,900	20,375
Train miles thousands..	57,411	57,328
Gross receipts ^a . .1000 rupees..	1,133,921	1,123,566
Passenger service . . do..	458,186	444,835
Freight service . . . do..	648,330	653,563
Gross receipts, equivalent \$1000	413,996	407,293

^a Including miscellaneous receipts not shown separately.

In 1926-27, 3682 vessels of 8,345,000 net registered tons entered the ports of India in the foreign trade and 3756 vessels of 8,694,000 tons cleared.

GOVERNMENT. Executive and legislative power rests with the Governor-General in council. The council consists of no fixed number of members, but at least three of them must have had ten years' service in India and one must be a lawyer of at least ten years' standing. The administration of India in England is under a Secretary of State for India, aided by a council appointed by him, of which at least half the members must have been residents of India for 10 years and must not have left India more than five years

previous to their appointment. A high commissioner for India in England acts as agent for the Governor-General-in-Council and conducts business assigned by the Secretary of State. There is also in India a legislature consisting of the Governor-General and two chambers, namely the council of state and the legislative assembly, both constituted under the Montagu-Chelmsford Act. See YEAR BOOKS for 1919 et seq. The Viceroy and Governor-General during 1928 was Baron Irwin of Kirby Underdale (appointed April 4, 1926). The Secretary of State for India was the Earl of Birkenhead (appointed November, 1924, and succeeded in October, 1928, by Viscount Peel). The High Commissioner for India in the United Kingdom was Sir A. C. Chatterjee.

HISTORY. As noted in the previous YEAR BOOK, the British Government early in November, 1927, announced that it had determined to appoint a commission to investigate the workings of the Montagu-Chelmsford plan of local self-government in India for the express purpose of finding out whether that plan had met with sufficient success to increase the amount of autonomy that the possession enjoyed. The appointment of this commission came about two years earlier than the original act of Parliament provided and it was stated that the reason for this was the strained relations that existed between the Hindus and the Mohammedans. The chairman of the commission was Sir John Simon, a well-known lawyer in London. For the balance of the membership of the committee and its failure to include any Indians, see preceding YEAR BOOK.

The Simon Commission arrived in India early in February and found a very divided country awaiting them. The failure to include any Indian members caused numerous strikes in many parts of the country and the native press of the Hindus bitterly complained of the ex parte nature of the investigation. On the other hand, the Moslems appeared strongly to favor the proposed investigation and possibly hoped thereby to strengthen their position with respect to the Hindus, who so completely outnumbered them. Sir John Simon pleaded for a chance to make a calm and adequate study of Indian affairs and begged that suspicions of the motives of his committee be banished. The two houses of the Indian legislature were opposed to the investigation as it was organized, the upper house suggesting the election of representatives to work with the commission, and the lower house suggesting, by a very close vote, the enforcing of a complete boycott of the plan. English officials both at London and in India stated in no uncertain tones that no matter what the opinion in India was the investigation was going forward as planned. In the conservative press it was freely intimated that the divided Indian opinion was all the argument necessary against the extension of more home rule for India. The Simon Commission traveled extensively throughout the country and returned to London on April 7, having completed the preliminary part of the investigation, in the carrying out of which they were scarcely hindered by the radical Hindu leaders. The Simon Commission again visited India early in October and made plans to continue its study. The method of attack was considerably liberalized, however, by making arrangements for an Indian committee to examine and report of the evidence collected. In the early investigation this

phase was virtually overlooked by the committee and caused considerable protest throughout the country. It should be said, however, that the caste system of India prevented many people from sitting on the same committee with members of another caste. Such a state of affairs was met by having practically no Indian participation at all. Under the new arrangements, Indians were able to assist in the examination no matter what their caste was. The close of the year saw the investigation still going on and it was expected that it would be many months before a report, even of a preliminary nature, could be made.

INDIA. LANGUAGE AND LITERATURE OF. See PHILLOGY, MODERN.

INDIANA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,930,390. The estimated population on July 1, 1928, was 3,176,000. The capital is Indianapolis.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Corn	1928	4,583,000	161,822,000	\$111,312,000
	1927	4,205,000	132,458,000	90,071,000
Wheat	1928	910,000	9,590,000	11,871,000
	1927	1,790,000	27,749,000	34,406,000
Hay	1928	1,828,000	2,504,000 ^a	29,979,000
	1927	2,048,000	3,006,000	31,221,000
Oats	1928	2,532,000	93,684,000	34,668,000
	1927	1,948,000	48,700,000	20,941,000
Potatoes	1928	61,000	6,649,000	4,654,000
	1927	53,000	5,035,000	5,538,000
Rye	1928	86,000	946,000	889,000
	1927	119,000	1,618,000	1,424,000
Tobacco	1928	13,700	11,234,000 ^b	2,247,000
	1927	8,400	6,884,000	1,403,000

^a tons, ^b pounds.

MINERAL PRODUCTION. The iron industry of the State and the coal mine production alike felt the effects of disturbed labor conditions in the coal fields in the course of 1927. The production of coal fell to 17,935,758 net tons for 1927, from 23,186,006 for 1926; in value, to \$36,381,000 for 1927, from \$45,889,000 for 1926 (see COAL). The pig iron production in 1927 was 3,477,764 long tons, as against 3,670,478 in 1926; the product of 1927 was valued at \$62,097,518, that of 1926 at \$69,292,329. Coke production fell to 5,499,000 short tons in 1927, from 5,990,344 in 1926, when the year's output was valued at \$44,143,059. Stone production in 1926, the latest year of record, was nearly the same as in 1925, being 4,699,230 short tons, as against 4,455,310 for 1925; the value of the total product was higher, being \$22,797,189, as against \$18,140,974 for 1925. Clay products attained a value, for 1926, of \$18,747,835, and for 1925, of \$18,037,932. Petroleum output was 852,000 barrels in 1927, 808,000 in 1926; in value, \$1,300,000 (estimated) for 1927 and \$1,770,000 for 1926. The total mineral production of the State in 1926 was \$118,692,304; in 1925, \$111,833,732.

FINANCE. State expenditures in the year ending Sept. 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$28,194,760 (of which \$5,233,413 was aid to local education); for interest on debt, \$77,606; for permanent improvements, \$13,846,016; total, \$40,118,382 (of which \$17,287,205 was for highways, \$6,839,494 being for maintenance and \$10,447,711 for construction). Revenues were \$43,078,196. Of this, property and special taxes furnished 34.7 per cent, departmental earnings

and charges for officials' services 10 per cent and sales of licenses and the tax on gasoline 39.8 per cent. Property valuation was \$5,188,356,739; State taxation thereon, \$11,933,220. Net State debt on Sept. 30, 1927, was \$1,649,500.

TRANSPORTATION. The total number of miles of railroad line under operation in the State on Jan. 1, 1928, was 7181.99. There were built in 1928 7.9 miles of additional second track.

EDUCATION. The work of formulating, with teacher participation, a State plan of high-school study was carried out by the State Department of Education and similar work with regard to elementary and intermediate grades was undertaken, during 1928. The school-age population, as estimated in May, 1928, was 851,125. There were enrolled in the public schools in the academic year 1927-28, 654,600 pupils. Of these, 523,103 were in the elementary schools and 131,497 in the high schools. Expenditures for public-school education totaled \$78,378,702.16. The median salaries of elementary, high-school and junior-high-school teachers, respectively, were: in cities, \$1441, \$1834, \$1530; in towns, \$1115, \$1480, \$1388; in townships, \$915, \$1347, \$1260.

CHARITIES AND CORRECTIONS. The Board of State Charities, which in 1928 was the central welfare agency, maintained supervision over institutions, both charitable and correctional, of the State, counties, townships, and municipalities, but did not administer them. The board consisted of six unpaid appointive members, serving three years, with the governor as their ex-officio chairman. Its duties included placing dependent and neglected children in foster homes, sanctioning adoptions, and deporting feeble-minded, epileptic, and insane non-resident paupers. It also supervised outdoor poor relief and kept watch over charitable employment agencies.

The institutions of the State for the care or custody of individuals, with the numbers of their inmates on Sept. 30, 1928, were: Central State Hospital, 1546; Logansport State Hospital, 1303; Richmond State Hospital, 1147; Evansville State Hospital, 1026; Madison State Hospital, 1026; School for Feeble-Minded Youth, 1569; Farm Colony for the Feeble-Minded, 344; Village for Epileptics, 709; Soldiers' Home, 401; Soldiers' and Sailors' Orphans' Home, 514; State Sanatorium, 177; University Hospital, 327; School for the Deaf, 382; School for the Blind, 122; Indiana State Prison, 2051; Indiana Reformatory, 1941; Indiana State Farm, 1183; Indiana Women's Prison, 197; Indiana Girls' School, 351; Indiana Boys' School, 488. The State institutions contained 2541 feeble-minded and epileptics on Jan. 1, 1928.

POLITICAL AND OTHER EVENTS. Governor Ed. Jackson was tried in February on a charge of conspiracy to bribe, but was acquitted. The charge alleged that Jackson in 1923, when secretary of state, acting in concert with George V. Coffin, republican county chairman, of Marion County, and Robert I. Marsh, an attorney, offered Warren T. McCray, then Governor of the State, \$10,000 to appoint James E. McDonald Prosecutor of Marion County. Ex-Governor McCray, recently paroled from Federal prison, appeared and testified to the offer of the money, and his son-in-law, William P. Evans testified to having been present when such an offer was made. The defense, prior to offering any testimony, moved that Special Judge Charles M. McCabe direct a verdict of acquittal. This the court did, on the

ground that the State had failed to show concealment of conspiracy prior to the previous July, and that consequently the crime charged was barred from prosecution under the State law by the statute of limitations. Some amount of public demand for the resignation of Governor Jackson followed, but he remained in office. The cases against his alleged accomplices were not prosecuted.

In connection with the impeachment in the previous year of Mayor Duvall of Indianapolis, City Councilman Boynton F. Moore was convicted March 2 of having accepted a bribe to vote against the impeachment. Four other councilmen pleaded guilty to receiving bribes and were fined. Attorney-General Gilliom early in the year instituted a suit against the Ku Klux Klan with the purpose of having it expelled from the State for illegal activities. He obtained information from a number of men formerly connected with the organization.

The State law of 1927 providing that the court appoint disinterested experts to testify as to the disputed sanity of criminal defendants was attacked and was held unconstitutional by a circuit court decision in April. A memorial drawn up by the State general assembly was transmitted to Congress in March, asking that Congress limit by statute the power of the Federal courts to receive appeals of public utility corporations from the orders of the State public service commissions until such corporations had first sought all means of remedy in State courts. This demand resulted from the successful Federal Court appeals that had been made from State rulings in Indiana by the Indianapolis Water Company and several other utilities. One large public utility, the Indianapolis and Cincinnati Traction Company, was sold at receiver's sale April 30, and the property was reorganized into two companies, the Indianapolis and Southeastern Railway Company and the Indiana Power Company. An ordinance of the city of South Bend, requiring motor buses in interstate service to pay a tax of \$200 a year each and to furnish liability insurance, was declared invalid May 14 by the U. S. Supreme Court. It represented a phase of efforts in the State to restrict the operations of such vehicles coming from across the borders.

State highway work in 1928 was devoted largely to the construction of 250 miles of concrete highway and 80 miles of bituminous macadam road, to bring the total of paved road in the State to about 2000 miles by the close of the year. The coal mining industry of the State continued upset during the early part of the year, owing to the unwillingness of the operators to continue the Jacksonville wage scale. After the action of the Policy Committee of the United Mine Workers at Indianapolis on June 18, granting districts the liberty to make their own terms with operators, the representatives of District 11 met with operators on August 3 to negotiate an agreement.

At Indianapolis the City Council was replenished by the Democrats and Reform element at an election to fill the places of seven members removed for misconduct or resigned. Meredith Nicholson, the author, was one of the new members. The United Christian Missionary Society, the chief benevolent and mission agency of the Church of the Disciples of Christ, announced its removal from St. Louis to Indianapolis. Suit

was brought by Joseph L. Hogue, former controller of Indianapolis, asserting his claim to succeed Mayor Duvall, who had resigned after his conviction on a charge of corruption in 1927. Hogue as controller under Duvall's predecessor, Shank, claimed that Duvall's prior dereliction had disqualified him as mayor, and that consequently Hogue became mayor by right of succession on Duvall's leaving the office for which he had been represented as ineligible by reason of his conviction. The State supreme court, sustaining the Marion County Circuit Court, ruled July 26 that Hogue held no further right of succession after having turned the office over to the controller under the Duvall administration. The Court further held that the Council in electing Slack temporary mayor had taken the correct course.

ELECTION. The voters of the State on November 6 gave an exceptionally large plurality for the Republican National ticket. The vote for President was: Hoover (Rep.), 842,290; Smith (Dem.), 562,691. A farm group opposed to Hoover had conducted an active campaign, which did not in most sections affect the result, since all but some eight of the 92 counties of the State gave Hoover majorities. Senator A. R. Robinson, Republican, shared in the large Republican vote and was reelected, defeating his Democratic opponent. A prevailingly Republican delegation to the United States House of Representatives was likewise elected. Harry G. Leslie, Republican candidate for Governor, defeated his Democratic opponent, Frank C. Dailey. Edgar D. Bush was elected lieutenant-governor; Otto G. Field, secretary of State; Archie Bobbitt, State auditor; James N. Ogden, attorney-general.

OFFICERS. Governor, Ed. Jackson; Lieutenant-Governor, F. H. Van Orman; Secretary of State, F. E. Schortemeier; Treasurer, Mrs. Grace B. Urbahns; Auditor, L. S. Bowman; Attorney-General, A. L. Gilliom; Superintendent of Public Instruction, Roy P. Wishart.

JUDICIARY. Supreme Court: Julius C. Travis, David A. Meyers, Clarence R. Martin, B. M. Willoughby, and Willard B. Gemmill.

INDIANA UNIVERSITY. A coeducational State institution of higher learning at Bloomington, Ind.; founded in 1820. For the first semester of the academic year 1928-29, the registration aggregated 4233 students, of whom 2533 were men and 1700 women. These were distributed as follows: Graduate school, 217; arts and sciences, 2474; law, 118; commerce and finance, 173; music, 92; education, 314; medicine, 432; dentistry, 176; nurses' training, 188; social service, 49. The faculty had 299 members. The endowment funds amounted to \$774,778, and the total income for the year, from State and private sources, was \$2,000,000. The library contained 197,700 volumes. In 1927, the legislature appropriated a mill tax that was expected to yield at least \$350,000 per year, for ten years, to be used exclusively for the construction of new buildings and the purchase of land. A new home for the nurses' training school, costing \$500,000, the gift of Ball Brothers of Muncie, Indiana, was dedicated in October, 1928. President, William Lowe Bryan, Ph.D.

INDIANS. According to the report of the Secretary of the Interior dated June 30, 1928, there were 355,901 Indians in the United States, excluding Alaska. They belong to 200 tribes, speak 58 languages, and live on 200 separate

reservations in 26 States, the greatest number being in Oklahoma, with Arizona second and South Dakota third. For the fiscal year 1928 Congress appropriated \$17,410,211.20 for Indian Affairs, or an increase of \$4,365,021.06 over 1927. During the same period the expenditures were \$16,697,053.09, and a great deal of the balance would be available for the fiscal year 1929. The Department of the Interior, besides administering the Congressional appropriations, is trustee for a large amount of tribal money received from oil, gas, and mining rentals, or from the sale of wood on Indian lands, etc., and its policy is to deposit part of this money in banks, and to utilize the remainder to add to the Congressional appropriation in paying for improvements such as irrigation, etc., to Indian tribal property.

On Feb. 21, 1928, the Institute for Government Research, which is an agency independent of the Government, presented the Secretary of the Interior with its survey of economic and social conditions among the Indians entitled, *The Problem of Indian Administration*, and undertaken at the request of the Department in 1926. This was the most complete and comprehensive survey of Indian affairs ever made, and contained many constructive suggestions for the improvement of all parts of the service. During the year some of its recommendations were made effective and a careful study of the others was being made to see if their application was practicable.

HEALTH. Trachoma, tuberculosis, and the diseases of childhood remain the most prevalent illnesses among the Indians. There were actually fewer cases of trachoma discovered in the fiscal year of 1928 than in the previous year, probably due in part to the separation of pupils in trachoma and non-trachoma schools. There were, however, an unusually great number of sufferers from measles and influenza, which led to the reappearance of many "cured" cases of tuberculosis and, by weakening the resistance of the younger population, increased its susceptibility to this disease. In treating Indian illnesses the earlier difficulties of lack of adequate equipment and the high turnover of the personnel of the hospitals were again experienced. It was hoped that the addition of 33 nurses and increases in salaries provided by the Welsh Act of May 28, 1928 (effective July 1, 1928), would reduce this high turnover. Seven new hospitals and a projected eighth, with a total of 169 beds, plus 50 more when the Kayenta hospital is ready, were added during the year. Owing to the difficulties in certain localities of providing water free from contamination, a consulting engineer is being employed to make a survey of the water and sewer systems throughout the reservations, and to make recommendations, wherever necessary, for a pure and sufficient water supply, and for sanitary sewage disposal.

EDUCATION. In 1928, \$5,923,000 was appropriated for Indian education and \$350,000 to pay the tuition of \$100 a year for the Indians in the public schools of the various States. There were 77 boarding schools, and 129 day schools, with a capacity of 25,766 pupils. There were 34,163 Indians in the State public schools, and 7621 more attended the various mission or private schools. This means that only one out of 20 eligible children between the ages of 6 and 18 was receiving a school education. There were only slightly over 1000 pupils more than in 1927,

while between the two preceding years the increase was 1811 pupils. Among the 206 schools there were only six where a so-called high-school education might be received, and in none of them was this instruction comparable to that given to the whites. The chief difficulty was the lack of funds which meant that teachers' salaries were low, equipment was poor, insufficient, and antiquated, and that the lack of books was very serious. The yearly allowance for the support of the schools was from \$230 to \$260 per student (\$4.73-\$5. per week).

In the boarding schools the survey of the Institute for Government Research found "the diet deficient in quality, quantity, and variety," the schools overcrowded, "supported in part by the labor of students," and in both day and boarding schools the medical attention was "below a reasonable standard" and the personnel was untrained and inexperienced. Lack of funds also delayed the extension of the platoon system which requires more teachers and space. By the law of May 8, 1928, 60 days' educational leave of absence was granted to teachers and physicians in order that they might attend summer courses.

An effort was also made to educate the Indians to the advantage of solid, well-made, and ventilated houses in which proper sanitary conditions were emphasized. Aided by reimbursable funds, the more advanced Indians used their resources to provide better homes for themselves and their families. The greatest progress was made by the Indians of the Kiowa, Comanche, and Apache reservations, where their houses were equal or even better than the average buildings of the whites. Wherever the Indians so wish it, a government superintendent advises them how to obtain the best and most suitable house, considering both the means at the disposal of the builder and the possibilities of the site.

OCCUPATION. After school, one of the chief difficulties and duties of the superintendents is to try to place Indians in positions that are congenial to them. Many do not wish to live on the reservations but prefer to enter some trade where they work with whites, and others wish to enter the civil service. In 1928 it was arranged that, on passing the usual civil service requirements, they would be allowed a preference percentage if they wish to enter the Indian branch of the service. Farming and stock raising are the most common occupations of the Indians. The government aids them by irrigation projects, notably the Coolidge Dam across the Gila River near San Carlos, Arizona, where Indians cultivate 12,000 acres, and by the reimbursable funds from which they may buy equipment, seeds, etc. One great problem is that the whites have gained control by sales, etc., of many of the best Indian farming lands. Another source of income is the sale of their handicrafts, such as blankets, pottery, embroidery, etc., from which they received \$1,267,816 in 1928, three-fourths of this being earned by the Indians of Arizona, Minnesota, and New Mexico. The purchasers are mostly tourists, people at a distance being uncertain that the goods are authentically Indian, and also being concerned over the sanitary conditions in which the article was made. It was suggested that a trade-mark, registered in the U. S. Patent Office, be employed to guarantee genuine Indian work and the sanitary con-

ditions under which it was made. It is felt that this would be of nearly untold benefit to the Indians.

LAW AND ORDER. In 1924 Congress conferred the right of citizenship, which includes the suffrage, on all Indians born in the United States. Although allowed to take part in the elections of the States in which they live, the Indians on reservations are not subject to the State laws, and so are unable to be prosecuted for the many offenses which they commit. Another problem is that of the liquor traffic which flourishes among them. In 1928, \$22,000, as well as State and Federal prohibition grants, was appropriated for the suppression of this traffic, but with no very noticeable results.

ALLOTMENTS. On the reservations 1067 allotments amounting to 101,234.42 acres, were made to individual Indians, and 91 allotments of 12,916.42 acres were made to residents of the public domain in the States. Besides small purchases of land made here and there for homeless Indians, the Seventieth Congress withdrew about 91,000 acres of the public land for the use of the Indians. This property was largely in New Mexico, Nevada, and Oregon. Sales of 1268 tracts totaling 151,413 acres were made for \$2,321,860, and fee patents worth 22,618 acres were given to 242 applicants and heirs of allottees, 4336 acres were released from government supervision by the issuance of 53 certificates of competency. See also **ANTHROPOLOGY**, under *New World Ethnography*.

INDO-CHINA, also known as **FARTHER INDIA**. The southeastern peninsula of Asia including the following divisions; Burma, politically attached to British India; Siam, a self-governing monarchy; French Indo-China, comprising Cambodia, Annam, Cochin-China, Laos, and Tongking; the Federated Malay States, a British protectorate; the Straits Settlements, a British colony; and the Malay States of Johore, Kedah, Kelantan, Perlis, and Trengganu. See the articles on **BURMA**, **FRENCH INDU-CHINA**, **SIAM**, and the other principal states mentioned.

INDO-IRANIAN STUDIES. See **PHILOLOGY**, **MODERN**.

INDUSTRIAL COURTS. See **LABOR ARBITRATION AND CONCILIATION**.

INFANTILE PARALYSIS. Through a gift of \$250,000 by Jeremiah Milbank, the following institutions were to cooperate in a concerted international campaign against this malady: University of New York, Columbia University, Harvard University, University of Chicago, University of Brussels, Lister Institute of London, and the Metropolitan Life Insurance Co. of N. Y. Dr. Wm. H. Park was made chairman of a committee which represented these various institutions and the latter were all to carry out their investigations independently of one another. The results after study and coordination by the committee were to be presented jointly.

In the early summer there was published in the daily press information from the Associated Press concerning an intensive campaign to be waged against infantile paralysis by practitioners and research men throughout the United States, which was said to have the backing or indorsement of the Rockefeller Institute. Some of the objects were as follows: the preservation and accumulation of convalescent serum, instruction of parents as to protection of their children from unnecessary and possibly danger-

ous contacts and as to the earliest symptoms of the disease before paralysis develops. The incentive for these movements was supplied in part by the likelihood of an epidemic similar to those of 1907 and 1916.

SUCCESSFUL SERUM TREATMENT. Relatively small groups of patients under specially favorable conditions, chiefly early diagnosis and treatment, have shown startlingly favorable results under the use of serum which was almost wholly from human convalescents. Drs. Aycock and Luther of the Harvard Medical School and Vermont Department of Health reported their experience to the American Medical Association at its annual session. If the injections were practiced before paralysis developed, only 19 per cent developed the total form, although in the untreated the figure was 65.6 per cent. The usual mortality was similarly cut down. At a meeting of the Interstate Post-graduate Medical Association of North America held at Atlanta Oct. 17, Dr. W. D. Ayer of Syracuse, N. Y., reported a personal series of 129 cases of which 96 made complete recoveries. Only 25 or about 20 per cent developed paralysis of any extent while but eight deaths occurred, a mortality of but 6 per cent. Of the 25 paralyzed, 10 made recoveries, which reduced the number of badly crippled to about 12 per cent. The author was able to show that had the administration of the serum been sufficiently prompt the number both of paralytics and fatalities should have been still further cut down. This author used convalescent serum, injected directly into the spinal canal, in nearly all cases, but in a few he substituted ordinary horse serum, apparently with the same good result.

THE SWIMMING TREATMENT FOR PARALYZED MUSCLES. It has long been known that swimming is the natural form of exercise for the paralysis which follows acute poliomyelitis and that through following up persistently remarkable results have been obtained, even old cases showing considerable improvement while recent ones go on to practical recovery, to the extent of dispensing with retentive and supporting apparatus. Until recently the method has been impracticable in the temperate zone, but in 1921 Franklin Roosevelt, elected Governor of New York in 1928, called the attention of the public to the waters at Warm Springs, Ga. where there are abundant swimming facilities in water with a temperature of 89° F. The result was the Georgia Warm Springs Foundation, a non-profit-making institution with a notable enlargement of the original plant. It is to be hoped that similar institutions will develop where there are warm bathing facilities, so that eventually the 125,000 sufferers from infantile paralysis in the United States will be placed in position to secure the utmost salvage from their loss of muscle power. The most noted testimonial to the efficacy of the swimming treatment was Governor Roosevelt himself, who was at the head of the Foundation, which dates only from January 1927.

An article with the title "Poliomyelitis Greatly Overrated," appeared in *Certified Milk* for December, 1928, and comprised the views of the well-known pediatricist, Dr. John Lovett Morse, as reproduced in the *Boston Transcript* on the occasion of the semi-annual meeting of the Middlesex South District Medical Society (Massachusetts). The speaker condemned the policy of the lay press in making capital of the incidence of

infantile paralysis and thus frightening the public and making hardships for health officers. People did not become hysterical over measles, whooping cough, and tonsillitis (a source of numerous internal diseases), yet each of these was a much more serious public health problem than infantile paralysis. Dr. Morse had a theory that the disease is all but universal, that all children pass through it, while only a few suffer death or paralysis. He condemned efforts to accuse this or that factor, such as the milk supply, and deprecated isolation and the closing of public schools. He even condemned the attempt to detect early cases and administer drastic treatment as apt to do more harm than good.

INFANT MORTALITY. See CHILD WELFARE; MATERNITY PROTECTION.

INFANTRY. See MILITARY PROGRESS.

INFLUENZA. In 1928 there was rather more influenza than usual in the United States after the advent of late autumn and winter weather, which caused speculation as to the possibility of a pandemic or a second and more severe wave of the disease. The fact that the disease was spreading from West to East, the first outbreak having appeared in southern California, appeared to be an exception to the general rule of centuries of epidemics. Up to the end of the year there was little of actual importance to record as seasonal influenza was to be expected; but in a news dispatch published in the daily papers under date December 23, it was stated that Dr. Arthur MacDonald of Washington, known principally as an anthropologist, criminologist, and alienist and a former assistant of the bacteriologist, Pfeiffer, who was for a long time regarded as the discoverer of the cause of the influenza pandemic of 1890-91 (Pfeiffer's bacillus), had expressed the opinion based on comparative studies that the disease was not propagated by contact but was air-borne. His figures showed that wherever there was open overcrowding, as in great cities, there was less susceptibility than in villages and rural districts; while those not exposed to the open air, as isolated criminals, appear to remain immune. It will be recalled that in the pandemic of 1918-19, some of the most deadly episodes occurred on shipboard.

INJUNCTIONS. See LABOR.

INSANITY. Dr. A. S. Lovenhart and Dr. W. F. Lorenz, of the University of Wisconsin, announced in the public prints the discovery of a method for arousing stuporous insane patients from their lethargy. Hitherto this had been deemed an impossibility although there is sometimes a spontaneous awakening. The rally is only transitory, but the patients are for the time being in a rational mental state and able to discuss their affairs coherently. The experiments along this line date back to 1916, but were interrupted by the World War and were only renewed after a number of years. The earliest tests were made with intravenous injections of certain drugs, but success led the scientists to substitute respirable gases or mixtures of the same in which attempts were made to test those which had an action opposed to the narcotic vapors. The experiments were in progress during the year 1928, and in due time the formula of the inhalation was to be presented to alienists everywhere for a thorough trial. While the gain thus far was considerable from the practical standpoint, it was believed that a new and promising field of research had been opened.

INSECTICIDES. See ENTOMOLOGY, ECONOMIC. **INSECTS, INJURIOUS.** See ENTOMOLOGY, ECONOMIC; ZOÖLOGY.

INSTALLMENT BUYING. See AUTOMOBILES.

INSTITUTE OF AGRICULTURE, INTERNATIONAL. See AGRICULTURE.

INSTITUTE OF CHEMISTRY. See CHEMISTRY, INDUSTRIAL.

INSTITUTE OF POLITICS. See POLITICS, INSTITUTE OF.

INSURANCE. In certain respects 1928 was a hectic year for the insurance business in the United States. Life insurance continued its magnificent growth in a normal way, but in fire and casualty insurance the year was marked by an activity in the organization of new companies and the refinancing of old ones such as never before was seen. During 1927 the prices of insurance company stocks had been soaring and the public had been buying with unexampled avidity. With the opening of 1928 the organization of new companies became even more active. Not only were these companies more numerous, but they were financed on a scale never before witnessed in the United States. The organization of companies with a million dollars of capital and with a surplus ranging from one to four millions became a common occurrence. In some instances bankers underwrote the entire issue and distributed it to the public in a few days.

Established companies took advantage of the conditions to increase their capital. While a few declared stock dividends and some others permitted their stockholders to subscribe for new stock at par, others issued the new shares at a very high premium. The prices of the shares of many companies placed them beyond the means of the small investor, and in order to get a wider distribution a number of companies split their shares, increasing the number and reducing the par value to \$10 or even \$5. Approximately \$150,000,000 was paid in as capital and surplus of fire and marine insurance companies, old and new, in 1928. About \$75,000,000 was paid into casualty and surety companies. The total was more than three times that of 1927.

This unusual activity created problems for company managements. The volume of premiums in some important branches of insurance was increasing but slightly. With new companies seeking part of the business and old ones endeavoring to increase their premium income in proportion to the increase in their capital investment, the most intense competition was to be expected. It will be fortunate for the business if this does not lead to laxity in underwriting, disregard of good practices, and payment of excessive commissions for acquisition of business.

For some years a tendency toward concentration of ownership or control of insurance companies has been growing. Fire insurance companies have acquired control of other companies and operated "fleets" with the same officers and employees. Casualty companies have organized fire insurance companies to be operated by their organizations, or vice versa. This tendency was strongly in evidence in 1928. A number of new fleets were organized and several important old ones increased their membership by securing control of larger companies than ever before had become subsidiaries of others. There were also several instances where life insurance companies became associated with fire and casualty com-

panies through common control. The developments of the year indicated that in the future insurance companies were likely to be the subjects of large financial transactions to a greater extent than in the past.

During 1928 the sales of life insurance nearly every month exceeded those of the corresponding month in 1927. The total sales for the year were approximately eighteen and a half billions of dollars, and a careful estimate made by the Association of Life Insurance Presidents placed the insurance in force in legal reserve companies at ninety-five billions of dollars at the end of the year.

The most pronounced increase was made in the volume of group life insurance, the total in force rising from \$6,378,000,000 to about \$8,000,000,000 during the year. It was estimated that about six million employees were protected by group life insurance. In addition to this, a large amount of accident and health and of accidental death and dismemberment insurance was being written on the group plan. The underwriting by life insurance companies of retirement and pension plans, the cost of which is borne jointly by employers and employees, was becoming more common. One of the largest of these programmes ever underwritten was announced in 1928.

There is no doubt that the increased interest in group insurance is due in a considerable measure to the development of the coöperative or contributory plan. When the first groups were written in 1911 and following years the employers paid the entire premium. Now in most cases employers and employees bear the expense jointly and it is possible for employees to secure a larger amount of protection. Many concerns have both systems, the original policy being paid for by the employer, while additional insurance has been taken out on the coöperative plan.

The mortality experience of the life insurance companies in 1928 was favorable. Leading companies in an increasing degree invested in loans on real estate which pay a much higher rate of interest than that assumed in the computation of their rates. Hence the savings from the expected mortality and the excess interest enabled them generally to continue or increase the liberal dividends to holders of their participating policies. The field of investments open to life insurance companies of New York State was broadened early in 1928 by an amendment to the law which permits investment in preferred stocks which meet certain requirements.

During the year many conferences were held between the Superintendent of Insurance of New York and officers and agents of the life insurance companies for the discussion of proposed amendments to the New York Insurance Law. The purpose of these amendments was to permit the use of the American Men Table of Mortality, which reflects present-day conditions, instead of the old American Experience Mortality Table and also to limit expenses of companies in certain directions in which there are signs of undue liberality. The use of the new American Men Table would enable companies to reduce their premium rates if they so desire. This, of course, would reduce the amount of dividends returned to policy-holders and would not greatly change the ultimate net cost of insurance, but, as the commissions paid to agents for selling life insurance are based on a percentage of the premiums charged, a reduction in rate would also reduce

acquisition cost. With very few exceptions the actuaries of the companies have expressed approval of the proposed amendments, but a considerable body of agents is opposing them.

The National Association of Life Underwriters, composed of thousands of the leading life insurance agents of the country, declared in favor of an extensive campaign of coöperative advertising of life insurance with a view to acquainting the public more fully with its advantages and thus encouraging the buying of more insurance.

The volume of premiums for fire insurance was virtually the same as in 1927, possibly a little smaller. Notwithstanding the vast amount of insurable property created every year, so much of it is written at a low rate because of the excellent type of construction of the buildings that the new premiums resulting only slightly more than offset the loss of premiums on property destroyed by fire, wind, and flood and on buildings razed to make room for new ones, together with the loss of premiums where rates are reduced because of improved municipal fire protection. As first losses for the year were some nineteen million dollars less than in 1927 the fire insurance companies generally made a very good underwriting profit on their fire business. See FIRE PROTECTION.

Automobile fire and theft insurance increased in volume as the output of new cars was large, but the stock companies did not gain much advantage from this as a large part of the increase went to mutual companies. The stock companies generally made such a profit on this class that the rates for 1929 were to be reduced, at least in the most profitable territories.

Fire insurance companies which write hail insurance on growing crops had a bad year in this class of their business as losses were heavy. This was especially true in Western Canada where many American companies write a large volume of this business. Companies writing tornado insurance in eastern Florida sustained very severe losses as the result of the hurricane which devastated the Palm Beach district in September. This storm, following by two years the one which visited Miami, caused a few companies to cease writing windstorm insurance on the East Coast of Florida. The large majority, however, decided to continue but to charge higher rates and restrict the volume of business accepted. The development of that territory would be seriously retarded if loans for building construction were curtailed, because windstorm insurance could not be secured to protect the interests of mortgagees.

In the field of casualty insurance 1928 was not an exceptionally favorable year. The volume of business grew somewhat, but not as much as in 1926. On most classes of their business, except workmen's compensation and health insurance, companies make some profit but nothing remarkable. Workmen's compensation rates were not yet satisfactory. It was very difficult to make them so, conditions which affect the losses were constantly changing. The fact that the amount of unemployment was relatively small at the time was likely to prove advantageous to the insurance companies as full payrolls increase premium income and losses usually decrease when industry is prosperous. However, more than 40 legislatures were to meet in 1929 and a number of them would almost certainly amend the compensation laws of their States, probably in the

direction of more liberal benefits. This would necessitate rate increases, but usually these lag behind the increase in claim payments.

One of the leading questions before the compensation rate-making organization was the rating of small risks. The expense of writing and inspecting a small risk consumes so much of the small premium received that this class had proved unprofitable at the same rates as yield a profit on large risks. A plan was adopted in several States of making a flat charge on the premium on risks paying a premium of less than \$300, and then making a slight reduction in rates generally. This resulted in small risks paying more than they had previously done and large ones paying a little less. Other plans had been worked out which it was believed would produce similar results in a more satisfactory manner, and they were to be put into effect in 1929. See **WORKMEN'S COMPENSATION**.

The experience on automobile liability insurance was such as to warrant a reduction in rates in a number of territories early in 1929. The experience in Massachusetts, where automobile liability insurance was made compulsory by law and the rates fixed by official authority, was bad. The rates promulgated for 1927 and continued for 1928 were inadequate. When the Commissioner of Insurance sought to promulgate higher rates for 1929, so much political opposition developed that he resigned. Under orders from a court, the acting commissioner then promulgated rates for 1929, but it is questionable whether they are adequate. They have been attacked in the courts both by insurance agents and by automobile owners, and the litigation was still pending as 1928 closed.

The volume of personal accident insurance increased a little, probably about 5 per cent. New forms of protection were constantly being introduced in this class of insurance. One of the latest was group accident and sickness insurance covering installment buyers so that their installments would be paid by the insurance company as they fell due if the buyer was prevented from paying them by reason of disability resulting from accidental injury or illness. There was a marked tendency among companies to restrict policies which had been liberalized too greatly. The sale of non-cancellable accident and health insurance, which was popular a few years previously, had diminished. But few companies were writing this class and the medical examinations which they require make it difficult to sell.

Another noticeable development in accident and health insurance was the increasing demand for policies which pay no indemnity for the first week, month, or even three months of disability. It is possible, of course, to sell these at much lower rates than the regular forms, and the purchaser who would suffer no great financial inconvenience from a brief disability can protect himself against the losses occasioned by lingering illness or a very serious accidental injury.

Companies writing steam-boiler and machinery insurance had a satisfactory year. Although the number of steam boilers was decreasing because of the greater use of power generated at central plants, the volume of steam-boiler insurance increased slightly by reason of the greater number of heating boilers insured. The number of explosions of such boilers had been sufficient to convince many owners that the frequent inspection given by the insurance companies were well

worth the premiums charged. The field of machinery insurance was being constantly broadened and flywheels, engines, turbines, and electrical machinery were being insured. Insurance of all these classes was taken more for the prevention of accidents by inspection than in expectation of receiving indemnity.

A reduction of about 9.4 per cent in plate glass insurance rates, which became effective Sept. 1, 1928, resulted in a decrease in premium income from insurance of stationary glass, but this loss was partially overcome by an increased volume of insurance on plate glass in automobiles. As there had been no reduction in the cost of replacing broken plates, the underwriting profit on this class would be rather small.

The surety companies in general enjoyed a fairly good year. The premium income from this class of business was believed to have reached \$100,000,000 for the first time. Bonds issued to contractors to guarantee the performance of their contracts constitute about a third of the total volume of bonding business, and the vast amount of large construction, both private and public, had swelled the premium income from this class. Losses on fidelity bonds, guaranteeing the honesty of employees, continued to be heavy. The companies had hesitated to advance rates as that would tend to aggravate under-insurance. In 1928 it was estimated that only about 10 per cent of the losses resulting from the dishonesty of employees in positions of trust were covered by insurance. Losses on bonds guaranteeing the safety of deposits in banks were less serious in 1928 than in the two previous years.

The burglary insurance companies on July 1 adopted a more liberal form of residence burglary policy, which it was believed would be more satisfactory to the public and would result in a larger volume of this class of business being written. Bank burglary insurance rates were revised as experience in various localities dictated, especially in the Middle West and Mountain States. In towns of less than 1000 population the losses had been so heavy that it was found necessary for underwriters to increase the rates materially.

One interesting development in casualty insurance was the better coordination of organizations. Casualty insurance is made up of a number of classes which originally were written by separate companies. Each class formed its own organizations to make rates and rules for the conduct of the business of that class. As most of the companies were writing many classes, they had found it necessary to become members of various organizations, whose functions in some cases overlapped. At the same time there were services required for the entire business, such as looking after legislative and supervisory matters, which none of these individual organizations could perform. Late in 1927 the Association of Casualty and Surety Executives was organized. It is composed exclusively of high officials of companies who could speak for their institutions in their entirety. By the end of 1928 it had brought several of the individual organizations into closer contact, had assigned them functions which did not interfere with those of others, and promised in time more fully to consolidate the casualty and surety business into one business rather than a collection of more or less related businesses.

INTELLIGENCE TESTING. See **EDUCATION; PSYCHOLOGY.**

INTERCOLLEGIATE ASSOCIATION OF AMATEUR ATHLETICS OF AMERICA. See **ATHLETICS, TRACK AND FIELD.**

INTERNAL-COMBUSTION ENGINES. The total production of Diesel engines in the United States during 1928 was close to 450,000 horse power. These engines went into the central station, industrial, marine, oil-line, and refrigeration fields. The largest central-station engine installed was a 4000-horse power unit at Tuscan, Ariz. But such installations were not confined to the oil-producing sections, for at the municipal plant in Rockville Center, Long Island, three four-cycle engines of 3300 horse power were put in. In the marine field over half of the world's tonnage built during the year, as well as that under construction, employed Diesel drive. This applied more to foreign yards than to American yards because of the lower cost of European-built Diesels and because turbine-electric drive is becoming a strong competitor of the oil-engine in American-built ships.

The Italian yards turned out three large Diesel passenger liners, the *Augusta*, a four-screw ship driven by four main engines of 7000 horse power each and having an additional 5000-horse power driving auxiliaries; the *Vulcania*, of 20,000 horse power; and the *Saturnia*, with 20,000 horse power. Another large transatlantic Diesel liner to complete its maiden voyage during the year was the 26,000-ton *Kungsholm*, of the Swedish-American line, which is driven by 15,000 horse power in Diesels. While oil engines had been employed in a number of cases for auxiliary drive on warships, and for main drive in smaller surface vessels and submarines, the first large war vessel to be propelled by Diesel engines was under construction by Germany. This vessel, it was stated, would have two 10,000 horse power Diesels.

The gas engine field which had been rather inactive for several years, except for a few orders for large engines to run on blast-furnace gas in steel mills, received a stimulus through the construction of long distance gas lines from the Texas and Oklahoma fields to Denver, Kansas City, and St. Louis.

A Diesel type of engine was adapted to the use of pulverized coal by Rudolph Pawlikowski and was reported to have passed the experimental stage in an installation at Gortitz, Germany. Two such units were built. The first was a single-cylinder unit of 80 horse power and the second is a three-cylinder unit of 180 horse power. A small charge of oil was employed to supplement the pulverized coal and insure ignition.

For automotive and airplane engines see subjects under **AUTOMOBILES** and **AERONAUTICS.**

INTERNATIONAL ARBITRATION. See **ARBITRATION, INTERNATIONAL.**

INTERNATIONAL ASSOCIATION FOR SOCIAL PROGRESS. See **SOCIAL PROGRESS, INTERNATIONAL ASSOCIATION FOR.**

INTERNATIONAL INSTITUTE OF AGRICULTURE. See **AGRICULTURE.**

INTERNATIONALISM. **CHRISTIAN PRESS CONFERENCE.** As one of the outcomes of the Universal Christian Conference on Life and Work, held in Stockholm in 1925, an International Christian Press Commission was created under the chairmanship of Prof. D. Hinderer of Berlin. As a result of his leadership, the First International Christian Press Conference convened in Cologne on August 19-21. Among the speakers were Archbishop Soderblom of Sweden, Professor

Deissman of Germany, Dr. Frederick Lynch of New York, Professor Alivisatos of Athens, the Rev. E. Gounelle of France, and Dr. Slotemaker de Bruine, the Dutch Minister of Labor. During the weeks preceding the Conference there was held in Cologne an International Christian Press Exhibit, organized in connection with a World Press Exhibit which the city was sponsoring.

LIFE AND WORK. The Continuation Committee of the Universal Christian Conference on Life and Work met at Prague, August 31 to September 5. The American Section included 13 members under the chairmanship of Dr. S. Parkes Cadman, president of the Federal Council of the Churches.

NORMAN WAIT HARRIS MEMORIAL FOUNDATION. This institute was permanently established through the generosity of the members of the Harris family. It is under the control of a faculty committee of the University of Chicago representing members of the various social science departments. The plan as arranged was to devote the entire fund to an institute held two or three weeks during June or July of each year. At each institute a rather limited field is chosen in the general field of international relations and three foreign lecturers are invited to give public lectures on topics within that field. The emphasis of the institute, however, is placed upon the round table meetings which are of a distinctly technical character. In addition to the foreign lecturers, experts from the United States are invited, including representatives of the Government at Washington, business men and bankers, as well as other scholars. These round tables are attended only on invitation and are confined to 30 or 40 persons. The records of the discussion are kept, but in confidential form for distribution only to the members of the round table itself. The aim of the round table is thus to furnish an opportunity for free discussion among experts in the topic, trusting that whatever of value emerges from these discussions will be utilized through the activity of these men themselves. No wide newspaper publicity has been sought, although the public lectures given by eminent European scholars attracted a good deal of attention. At first the plan was to deal with some particular region of the world, and Western Europe, the Far East, Mexico, and the British Empire have been taken up in successive institutes. In 1928 a somewhat different plan was followed in devoting the entire institute to the subject of foreign investments. The public lectures are published in regular series by the University of Chicago Press.

AMERICAN COMMITTEE, GENEVA. The work of this Committee has been continued since 1924. During the summers of 1924, 1925, 1926, and 1927, the Committee maintained in Geneva an office for the reception of American visitors with a staff of competent people devoting themselves to making contacts for English-speaking people in Geneva. In 1927-28 the office was maintained at the International Club throughout the year. An addition to the Club Building, erected by the City of Geneva, has enabled the work to be done much more adequately.

In October, 1927, the Committee appointed Mrs. F. H. Whitin of New York, Directress of its work in Geneva. She was in Geneva throughout 1928 and thoroughly established the work of the committee. Her duties consisted generally of the management of the preparations for the Geneva Institute of International Relations; the recep-

tion of Americans in Geneva; and the distribution of documents and information in America.

The number of visitors who come to Geneva for the purpose of studying international organization was increasing. They now include many serious-minded students, some of them remaining in Geneva for several months. The Library of the League of Nations Secretariat and the Library of the International Labor Office are open to accredited students. The visitors include many Americans, particularly during the summer months. Numerous American college and university groups come to Geneva to spend several days and all of them require some assistance. In fact, the presence of such a large number of visitors in Geneva makes it essential that the American Committee should continue its important and useful work.

THE UNIVERSITY INSTITUTE OF HIGHER INTERNATIONAL EDUCATION. This organization at Geneva is devoted to systematic post-graduate study of international problems. Its creation was made possible by the Rockefeller Foundation. At the head of it was M. Paul Mantoux, formerly director of the Political Section of the League of Nations Secretariat and before the War professor of American history in London University. Students of the Institute are able to attend lectures on special subjects, take part in round-table conferences, and receive help and guidance in their personal research. A special diploma or doctorate will probably be granted, the latter by the University of Geneva, the former probably by the Institute itself, on the basis of essays and theses presented by students. In addition to its permanent staff, the Institute draws on the services of the many distinguished visitors who pass through Geneva almost every week. It is governed by a board of five members—Professor Under, of the University of Upsala (formerly Foreign Minister of Sweden); Mr. Vernon Kellogg, American member of the League Committee on Intellectual Cooperation; the Rector of Geneva University; the head of the Department of Public Instruction of the Canton of Geneva, and the head of the Federal Department of the Interior.

INSTITUTE OF INTERNATIONAL EDUCATION. This institute, founded in 1919 with headquarters at 2 West 45th Street, New York, pursued its general purpose of "developing of international good will and education through such activities as the exchange of professors; the establishment of international fellowships; the holding of conferences on the problems of international education; and the publication of books and pamphlets on the systems of education of the different countries."

The Institute, which also serves as the New York office of the American University Union, acts as a clearing house of information and advice for the Americans concerning things educational in foreign countries, and for foreigners concerning things educational in the United States. In addition it administers and maintains the offices of the American University Union in London, Paris, and Rome, and has contact offices and correspondents in other countries. It publishes a number of bulletins of interest to students, particularly on *Fellowships and Scholarships Open to Foreign Students for Study in the United States* and *Fellowships and Scholarships Open to American Students in Foreign Countries*, as well as the *Handbook for American Students in France*, bulletins dealing with

higher education in other countries of Europe, and a *Guide Book for Foreign Students in the United States*.

Among the fellowships administered by the Institute are the American Field Service Fellowships for French Universities; American-German Student Exchange Fellowships; American-Czechoslovak Exchange Fellowships; American-Hungarian Exchange Fellowships; Austro-American Exchange Fellowship; Franco-American Exchange Scholarships; Swiss-American Exchange Fellowships; Scholarships for the Junior Year Abroad; Germanistic Society Fellowship for study in Germany and the Willard Straight Research Fellowship for Study in China.

In addition the Institute arranges for the placement of a number of young American men in *postes d'assistant d'Anglais* in French lycées and écoles normales. It is also instrumental in bringing to this country distinguished scholars, educators, and university professors from all countries of the world. These it distributes among American colleges and universities to deliver lectures in all fields of scholarship, but particularly in those which will enable Americans better to understand the institutions, culture, and civilization of the other countries. Dr. Stephen P. Dugan is director; Archie M. Palmer, assistant director, and Mary L. Waite, executive secretary.

THE ENGLISH-SPEAKING UNION OF THE UNITED STATES. This American society, incorporated in 1920 with national headquarters in New York, conducted activities aimed to foster understanding and good will between all English-speaking people. It cooperated to this end with a parallel British organization, the English-Speaking Union of the British Empire. Its working programme included meetings to discuss pertinent subjects and exchange views with representative men and women from overseas; individual service to members, especially in providing information and introductions when they go abroad; giving friendly assistance to members of the British Society and other English-speaking visitors to America; and promoting exchange visits by American and British students, teachers, and journalists.

Under this exchange plan, special groups of American college students have visited England every summer, while on this side the union has helped to entertain parties of undergraduates from England. A member of the union had endowed four scholarships for British graduate students, with the society's cooperation, at the University of Michigan. Teachers have likewise visited the United States each summer, some on traveling scholarships provided in England and some appointed to scholarships offered by the Chautauqua Institution at Chautauqua, N. Y. American teachers have made similar visits to England, and the Chautauqua Chapter of the Union had provided a scholarship enabling an American teacher to take a summer course at a British university. Exchanges of teachers for the full school year also had been arranged between American and British secondary schools.

Under the American Newspaper Fellowship in memory of Walter Hines Page (see *YEAR BOOK*, 1927), two British journalists ("Junior" and "Senior") are selected from year to year to spend sufficient time on this side to become familiar with American life. Reciprocal newspaper fellowships were provided in England, with the same purpose of advancing mutual understanding through the medium of the press. Member-

ship in the American society had grown in seven years from about 2500 to 17,000 and in 1928 it had forty branches with outposts at Honolulu and Manila. The British society, founded in 1918, had a membership of about 13,000 and sixteen branches in Great Britain and the Dominions. Thus between the two there were already more than fifty links in a chain of friendship which encircled the globe.

INSTITUTE OF INTERNATIONAL RELATIONS. The Fourth Session was held at the University of Southern California, Los Angeles, December 9 to 13. The subject matters discussed included: Our Latin-American Policy; The Resident Alien Problem in the Southwest; International Commerce; Reorganization of the Department of State; The New China; Japan; The Foreign Student; Kellogg Peace Pacts; International Finance; Problems of Food and Population; Foreign Policies of American Political Parties. The chancellor of the institute was president, Dr. Rufus B. von Klein Smid of the University.

INTERNATIONAL JUSTICE. See LEAGUE OF NATIONS.

INTERNATIONAL LAW. The Preparatory Committee provided for by the Assembly of the League of Nations in connection with the first conference for the Codification of International Law, which is to be called by the League at The Hague in 1929, was duly appointed by the Acting president of the council on November 4; and consisted of Professor Basdevant (French); M. Carlos Castro Ruiz (Chilean); Professor Francois (Dutch); Sir Cecil Hurst (British); and M. M. Pilotti (Italian). Its task was not to attempt to write new law, but to analyze and put in order the views received from the different governments on the three questions on the conference agenda, i.e. nationality, territorial waters, and the responsibility of a state for damages to foreigners through crimes committed within its territorial limits.

A ten-day session of the Committee was held at Geneva in the spring of 1928. For the three questions on the agenda of the conference, the committee drew up detailed questionnaires to be sent to all governments for reply at the latest by October 31, and to contain, if possible, information as regards present national and international legislation, experience gained from their own practice and views as regards the filling up of gaps in international law. The scope of the questionnaires may be seen from the fact that the first covers questions as to the exclusive competence of each state regarding nationality, double nationality, the effects of the naturalization of parents on the nationality of children, nationality of children of unknown parents, cases of double nationality or loss of nationality, as with married women; that the second raises the question of the nature of the sovereignty of a state over its territorial waters, the status of waters surrounding islands and in straits, discrimination between inland waters and territorial waters; and the third, the international responsibility of states for damages done on their territory to foreign property or persons; cases of riot or insurrection, pecuniary reparation, and other matters.

The thirty-fifth biennial meeting of the International Law Association met in Warsaw, Poland, August 9-15. The American Branch of the Association, including members both in the United States and Canada, constituted one of the largest

sections of the Association and was making a strong bid for a meeting of the Association in North America in the near future. The last general meeting in the Western Hemisphere was at Buenos Aires in 1922, when the delegates were largely the guests of the Argentine Government. The last meeting in the United States was held at Portland, Maine, in 1907. Chief Justice William H. Taft was honorary president of the American branch, and the Rt. Hon. Sir Robert L. Borden, former Premier of Canada, and the Hon. John Bassett Moore, who during 1928 resigned as a member of the Court of International Justice at The Hague, and the Hon. John W. Davis are honorary vice presidents, Amos J. Peaslee of New York was elected president of the American branch at its last annual meeting in New York City. Edmund A. Whitman of Boston was vice president, and Oscar R. Houston of New York was honorary secretary.

The Polish Branch arranged a programme of unusual interest for the biennial session, including many functions at which the Association was the guest of the Polish Government. The principal topics were the effect of war on private contracts, the progress of the codification of international law, international cartels, and some new developments in the principles of international law respecting extradition, the laws of war in occupied territory, and conflict of laws.

The American Government through the Department of State addressed a communication to the Secretary General of the League of Nations, Sir Eric Drummond, stating that the United States could not agree to the advisability of the codification of three questions of international law. These three questions are Communication of Judicial and Extra-Judicial Acts on Penal Matters; the Legal Position and Functions of Consuls; the Revision of the Classification of Diplomatic Agents.

The full text of the announcement by the Department of State follows:

The Secretary General of the League of Nations, with a communication dated June 7, 1927, was good enough to transmit to the Secretary of State of the United States certain questionnaires and reports prepared by the Committee of Experts for the Progressive Codification of International Law and to request the opinion of the Government of the United States as to whether the regulation by international agreement of the subjects treated in the questionnaires, having regard both to their general aspects and the specific points mentioned in the questionnaires, is desirable and realizable in the near future.

Question No. 8: With respect to the amended draft convention on this subject submitted with the report of the subcommittee of the Committee of Experts, it may be stated that the taking of the testimony relating to criminal cases in foreign countries by the use of letters rogatory, with which Article I of the amended draft deals, is a process for which no provision has been made by the legislation of the Federal Government and one which under the system prevailing in the United States can be employed, if at all, only pursuant to the laws of the several States. It is not deemed advisable to make commitments by international convention to change the existing practice in this regard prevailing in the United States. Moreover, evidence obtained in foreign countries through letters rogatory could not be used in criminal cases in the United States, since under the Constitution the accused must be confronted by the witnesses against him.

With respect to the second article of the revised draft, it may be stated that the Government of the United States is not prepared to commit itself to serve summonses emanating with foreign courts on witnesses or experts resident in the United States or to surrender persons in custody, except through the process of extradition.

It is the view of the Government of the United States that the matter of the surrender of exhibits dealt with in the third article of the amended draft convention can be adequately provided for in extra-

dition treaties. Indeed, provisions for the surrender of property in possession of fugitives are contained in some of the extradition treaties of the United States. The list of treaties appended to the report, as examples of judicial co-operation, indicates that the subject as heretofore treated is closely related to extradition.

While conventions on the subject of judicial co-operation doubtless serve a useful purpose among countries in close geographic proximity to each other, it is not apparent that uniform application of such agreements is necessary.

Question No. 9: The experience of the Government of the United States has not revealed any considerable uncertainty regarding the legal position and functions of consuls. Furthermore, this matter has been the subject of numerous provisions in bilateral treaties. It is the view of the Government of the United States that no compelling necessity exists for the treatment of this subject by a general international convention.

Question No. 10: The Government of the United States does not consider it desirable to revise the classifications of diplomatic agents as proposed. No circumstances or conditions demonstrating the desirability of changing the classification have been revealed, nor is there reason to expect that the proposed change, if made, would effect any material improvement.

The Government of the United States does not consider that the regulation by multilateral international agreement of questions 8 and 9 or the change of classification proposed in question 10 is desirable or attainable in the near future.

Question No. 11: The Government of the United States is inclined to the view that an international agreement on the subject of competence of the courts in certain classes of cases against foreign States, would serve a useful purpose, and would therefore be desirable, and that there should be no insuperable obstacle to the concluding of an agreement on that subject.

On the initiative of the faculty of the Harvard Law School, a group of Americans interested in international law undertook to organize a co-operative research in international law, dealing with the three topics which had been selected for the agenda of the Conference on Codification of International Law, to be held in 1929 under the auspices of the League of Nations. The necessary funds having been appropriated by the Commonwealth Fund, at the first meeting of the group George W. Wickersham was elected chairman of the committee, and an executive committee was created, composed of Joseph H. Beale, Manley O. Hudson, Prof. Charles Cheney Hyde, Elton R. James, Francis B. Sayre, Dr. James Brown Scott, and Mr. Wickersham. It was decided that the research should be undertaken along the general lines followed by the Institut de Droit International and the American Law Institute with a director of research, with a reporter for each of the subjects to be considered by the 1929 conference, and with advisers to assist each of the reporters. Mr. Hudson was chosen to be the Director of Research, and the reporters were named as follows: On Nationality, Richard W. Flourney; on Territorial Waters, Prof. George Grafton Wilson, and on Responsibility of States for Damage Done on Their Territory to the Person or Property of Foreigners, Prof. Edwin M. Borchard.

Prof. Manley O. Hudson of Harvard contributed to the *American Journal of International Law* (April, 1928) a comprehensive article on "The Development of International Law Since the War."

INTERPARLIAMENTARY UNION. The 25th Conference was held in Berlin, August 23-28 in the Reichstag. Its sessions were principally occupied with three questions: Evolution of the Parliamentary System; Migration Problems; and the Rights and Duties of States. On each of these questions the conference adopted a resolution.

The significance of the work done by the Union was referred to in a speech, delivered at the open-

ing session by the German Chancellor, Herr Hermann Müller. He said:

The catastrophe of the World War had naturally interrupted the work of the Interparliamentary Union, but those present at the conferences of the Union in the years immediately following the war would recall that it was just at those conferences that the bonds were reknit which must never again be rent, lest Europe be reduced to a heap of ruins. . . . No epoch had ever more need of community of effort. In the necessary labors on behalf of the mutual progress of the peoples the Union is a particularly effective instrument. Parliamentarism, like every human institution, has its weaknesses; but, of all methods of government, the parliamentary system offers the easiest, surest, and most just compromise of interests. In every parliament the task is to effect a compromise of conflicting interests, and to win over the majority. This is, above all, true for the great world parliament constituted by the Interparliamentary Union. Difficulties and conflicts will always exist among the nations, but it is the aim of the Union to see that these conflicts are fought out in the same arena in which struggles are conducted within parliaments, namely, in the arena of intellectual conflicts.

The early sessions were devoted to a discussion of the report presented to the conference by the Secretary General of the Union. Dr. Christian L. Lange, and centred around questions of disarmament and the outlawry of war, and on the day of the signing of the Kellogg Pact in Paris the following telegram was dispatched to Messrs. Kellogg and Briand:

The 25th Interparliamentary Conference, composed of the elected representatives of 38 countries, sends a sincere greeting in the name of the Interparliamentary Union to the authors of the pact condemning war, Messrs. Kellogg and Briand, and to the other representatives of states who will today solemnly sign that treaty. It expresses the hope that every other state will adhere to the document. At its 22d Conference in Bern, in 1924, the Union proclaimed the principle of the outlawry of war. It considers that one of its chief tasks will now be to work in favor of the complete embodiment of that high principle in international relations and in the legislation and policy of every country.

On the question of the evolution of parliamentary system, the conference had before it a comprehensive report on the subject, prepared by Dr. J. Wirth, former German Chancellor, and the resolutions presented by him. In the place of this resolution, with its series of specific proposals, the conference adopted a general resolution, at the same time referring Dr. Wirth's resolution and the several amendments to it proposed in the course of the debate on the subject back to the Council's Committee for Political and Organization Questions for fresh study.

On the question of migration the conference had before it three documents; a report, presented in the name of the Committee for the Study of Social and Humanitarian Questions, by Dr. Slavko Secerov, of Jugo-Slavia; a memorandum on the subject, prepared by the Bureau of the Union on the basis of information furnished by the various national groups; and the project of a resolution presented by Dr. Secerov. In the course of the discussion on the subject, Dr. Secerov's resolution was slightly modified in two unimportant respects and was adopted by the Conference unanimously, except that the American delegation abstained from voting on it.

The American point of view was expounded by Representative Andrew J. Montague, who, in the absence of Representative Theodore E. Burton, President of the American group, headed the American delegation. Mr. Montague stated that America regards the problem of migration as one of purely domestic policy, and that while in Dr. Secerov's report, as well as in the general discussion, this point of view was conceded to

some extent, nevertheless both the report and the resolution tend to suggest the need of an international discussion of the problem. For this reason the American delegation felt compelled to abstain from voting on the resolution.

The American delegation also abstained from voting on the resolution dealing with the rights and duties of states, which was presented to the conference by Senator Henri La Fontaine, of Belgium. The view of the American delegation was stated by Representative Roy G. Fitzgerald who declared that the American delegation could not accept Article 7 of the proposed resolution, which read as follows:

"A state victim of armed aggression has the right to legitimate defense, and the community of states is obliged to lend it its support. A state is also entitled to that support in the case of disregard or violation of an acknowledged right."

This article, in the interpretation of the American delegation, imposes, under certain conditions, upon states the obligation to take part in a war. The American delegation maintained that there are only two methods of regulating relations among states: 1, the method of arms, i.e. war, provided for in Article 7; and, 2, the method of law, i.e. peace. It declared its unequivocal preference for the second of these methods. The text of the resolution aroused a certain amount of opposition in some of the other delegations as well. It was finally adopted by a majority vote.

The conference brought together representatives of thirty-eight parliaments. The American Congress was represented by the following delegation: Senator Walter E. Edge, of New Jersey; Senator Elmer Thomas, of Oklahoma; Representatives Fred Britten, of Chicago; Thomas E. Cochran, of Pennsylvania; Roy C. Fitzgerald, of Ohio; F. H. LaGuardia, of New York; Charles Linthicum, of Maryland; Andrew J. Montague, of Virginia; and former Representative Richard Bartholdt, of Missouri. The delegation was accompanied by Arthur Deerin Call, executive secretary of the American group, and Leo Pasvolosky, assistant secretary.

Baron Theodor Adelsward, the former president of the Interparliamentary Council, having tendered his resignation, M. Fernand Bouisson, president of the French Chamber of Deputies, was elected president in his stead. M. Bouisson thus also becomes the chairman of the executive committee. The conference elected Dr. L. Moltesen, Minister of Foreign Affairs of Denmark, to take the place of Dr. J. Brabec (Czechoslovakia) the retiring member, on the committee. The executive committee therefore was to be composed as follows: M. Fernand Bouisson (France) president; Senator R. Dandurand (Canada) until the 26th Conference; Dr. W. Schucking (Germany) until the 27th Conference; M. H. La Fontaine (Belgium) until the 28th Conference; Dr. L. Moltesen (Denmark) until the 29th Conference. The committee nominated Dr. Schucking to act as president of the council in case of the absence, resignation, or death of the president. The secretary general of the union was Dr. Christian L. Lange, with headquarters at Geneva.

The 25th Annual meeting of the American group was held in Washington, on February 24, with the Hon. Theodore E. Burton presiding.

INTERSTATE COMMERCE COMMISSION. See RAILWAYS; UNITED STATES.

INVESTMENT. See FINANCIAL REVIEW.

IONA SOCIETY, AMERICAN. An association chartered May 23, 1925, by the Regents of the University of the State of New York to "preserve, encourage, and promote Celtic culture," and for the establishment in Scotland of a centre of Gaelic culture. Progress was made during 1928 in the plans for the establishment of a university, offering courses in the Celtic language, literature, music, arts, and crafts, to be located in Scotland with its principal office in New York. The officers in 1927 were: President, Richard M. Montgomery; vice presidents, Dr. John H. Finley and James Stewart Cushman; secretary, Marshall Beuick; treasurer, Nelson Macy; counsel, Col. Alexander R. Fordyce. The headquarters are at 300 Madison Avenue, New York.

IOWA. POPULATION. According to the fourteenth census of the United States, the population of the State on Jan. 1, 1920, was 2,404,021. According to the State census taken in 1925, the population was 2,419,927. The estimated population on July 1, 1928, was 2,428,000. The capital is Des Moines.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Corn	1928	11,174,000	475,012,000	\$318,928,000
	1927	10,901,000	386,986,000	287,020,000
Oats	1928	6,001,000	240,040,000	88,815,000
	1927	6,001,000	192,082,000	80,652,000
Hay	1928	3,056,000	4,516,000 ^a	57,769,000
	1927	3,416,000	5,554,000 ^a	68,532,000
Wheat	1928	428,000	8,270,000	8,276,000
	1927	441,000	8,236,000	9,623,000
Potatoes	1928	81,000	10,935,000	5,577,000
	1927	75,000	6,150,000	6,150,000
Barley	1928	808,000	27,068,000	14,617,000
	1927	454,000	14,256,000	9,409,000

^a tons.

MINERAL PRODUCTION. Coal output, the chief item in the mineral production of the State, fell off sharply in 1927, owing to labor trouble which the State felt in common with other coal States. The quantity of coal produced in 1927 was 2,949,622 net tons, as against 4,625,487 in 1926; in value, \$9,304,000 for 1927, and for 1926, \$14,214,000. Iowa ranked second among the States in 1926 in the production of gypsum. There were produced, in 1926, 802,910 short tons, and in 1925, 800,167; in value, \$6,588,203 for 1926 and for 1925, \$6,734,271. Cement production in 1927 was 5,415,144 barrels, and in 1926, 4,925,811; the value of cement shipments was, for 1927, \$9,124,405, and for 1926, \$8,167,341. The value of clay products declined to \$4,459,724 for 1926, from \$5,703,537 for 1925. The total value of the mineral production of the State was, for 1926, \$35,971,787; for 1925, \$38,420,203.

FINANCE. State expenditures in the year ending June 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$23,033,531 (of which \$778,361 was aid to local education); for interest on debt, \$816,559; for permanent improvements, \$13,053,164; total, \$36,903,254 (of which \$14,333,370 was for highways; \$4,358,469 was for maintenance and \$9,974,901 for construction). Revenues were \$37,540,663. Of this, property and special taxes formed 35.2 per cent, departmental earnings and charges for officials' services, 15.0 per cent, and sales of licenses and a tax on gasoline, 38.0 per cent. Property valuation was \$1,544,577,654; State taxation

thereon, \$10,803,840. Net State funded debt on June 30, 1927, was \$20,195,085.

TRANSPORTATION. The number of miles of railroad line under operation in the State on Jan. 1, 1928, was 9759.96. There were built in 1928, 7.9 miles of additional second track.

EDUCATION. A State plan of study in elementary public schools was prepared in 1928. The school-age population for the academic year 1927-28 was put at 713,297. There were enrolled in the public day schools of the State 551,400 pupils. Of these, 261,505 were in the elementary schools, 162,608 in unconsolidated rural schools, 17,811 in kindergartens, and 109,476 in high schools. The total expenditure for education from the General Fund, was \$47,610,453. Teachers' salaries averaged, for men, \$200.39 a month; for women, \$112.58.

CHARITIES AND CORRECTIONS. The Board of Control of State Institutions has exercised full management over State institutions since 1898. It had under its care in 1928, 15 institutions. It further inspected county and private insane institutions, detention homes, and organizations to aid friendless children. The State institutions were: Soldiers' Home, Marshalltown; Soldiers' Orphans' Home, Davenport; Juvenile Home, Toledo; Institution for Feeble-Minded Children, Glenwood; State Sanatorium for Treatment of Tuberculosis, Oakdale; Training School for Boys, Eldora; Training School for Girls, Mitchellville; Mount Pleasant State Hospital (insane), Mount Pleasant; Independence State Hospital (insane), Independence; Clarinda State Hospital (insane), Clarinda; Cherokee State Hospital (insane), Cherokee; Hospital for Epileptics and School for the Feeble-Minded, Woodward; State Penitentiary, Fort Madison; Men's Reformatory, Anamosa; Women's Reformatory, Rockwell City.

The three penal and reformatory institutions of the State had on Jan. 1, 1928, 2157 inmates; admittances in the year previous had numbered 760. Epileptics and feeble-minded in State institutions on the same date numbered 2367.

LEGISLATION. Governor Hammill summoned the Legislature to meet in special session in March, for the purpose of highway financing. The Legislature passed an act providing for the issue of \$100,000,000 of road bonds to bear 4 per cent interest and mature in 20 years. The proposal was subject to approval by popular vote at the November election. Governor Hammill signed the act March 14.

POLITICAL AND OTHER EVENTS. Governor Hammill made the State road programme a chief feature of his campaign for reelection, asserting that the proposed bond issue would provide the State in the course of six years with 4900 miles of paved primary highways. It was the purpose of his administration to expend on the road programme not only the proceeds of bonds but those of the gasoline and automobile registration taxes, providing ultimately a highway system representing an investment of \$250,000,000. The use of propaganda in Iowa schools, for the benefit of a group of public utilities, was related in testimony given in the course of the Federal Trade Commission's investigation of public utility activities. It was alleged that members of the teaching force had received financial aid, that influence had been used to obtain the use of a favored textbook and that matter favorable to the utilities had been fed to the public through some 650 Iowa newspapers that received utilities' ad-

vertising. The Iowa State College maintained an experimental organization to study the utilization of cornstalks in the manufacture of wall-board. The upper Mississippi wild life and fish refuge, developed along the course of the Mississippi adjacent to Iowa and neighboring States, under the control of the Federal Government, was enlarged by land acquisitions, notably by the gift of 488 acres near McGregor, Iowa, largely timbered, belonging to James B. Munn.

ELECTION. Iowa, as the early home of Herbert Hoover and as the centre of much agricultural dissatisfaction, was a scene of acute political division in 1928. Hoover and Curtis, the Republican nominees, carried the State by a much reduced plurality as compared with 1924 and 1920, the Progressive vote of 1924 apparently going chiefly to Smith. The vote was: Hoover (Rep.), 623,818; Smith (Dem.), 378,936. An entirely Republican delegation of United States Representatives were elected, among whom all but two were the existing incumbents. Among the reelected Representatives was Gilbert N. Haugen, co-author of the McNary-Haugen Bill, who supported Hoover. The voters approved the proposal for an issue of \$100,000,000 of State bonds for standardizing the State highway system, by a vote of about two to one. John Hammill, Governor, was reelected on the Republican ticket.

OFFICERS. Governor, John Hammill; Lieutenant-Governor, Clem F. Kimball; Secretary of State, W. C. Ramsay; Treasurer, R. E. Johnson; Auditor, J. W. Long; Attorney-General, John Fletcher; Superintendent of Public Instruction, Agnes Samuelson; Secretary of Agriculture, Mark G. Thornburg.

JUDICIARY. Supreme Court Justices: Truman S. Stevens, Charles W. Vermillion, Frederick F. Faville, Lawrence DeGraff, William D. Evans, E. G. Albert, E. W. Morling.

IOWA, STATE UNIVERSITY OF. A coeducational State institution of higher learning at Iowa City, Iowa, founded in 1847. The enrollment for 1927-28 was 9249, of whom 4428 were women, and 4821 men, and for the autumn of 1928 the enrollment was 6711. The summer school registration totaled 4473. There were approximately 600 members on the faculty in the autumn of 1928. The general library contained 279,575 volumes, and the law library, 47,866. The income for 1927-28, including revolving funds, was \$6,440,898. Gifts to the university during the same period aggregated \$530,409; including: \$450,000 from the General Education Board and Rockefeller Foundation for a new medical building; and \$7500 from the Institute of Social and Religious Research in Character Education. A new \$5,000,000 general hospital was completed and occupied during the year, and a large addition was made to the nurses' home. President, Walter A. Jessup, Ph.D., LL.D.

IOWA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS. A State institution for the higher education of men and women at Ames, Iowa, founded in 1868. The enrollment for the autumn term of 1928 was 4022, distributed as follows: Agriculture, 819; agricultural engineering, 49; engineering, 1285; home economics, 1015; industrial science, 408; veterinary medicine, 139; and graduate college, 307. The first half of the summer session had a registration of 1530, and the second, 823. The faculty numbered 373 members. The endowment funds amounted to \$695,000, and the income for

the year to \$4,267,000. The library contained 160,000 volumes. Additions to the physical plant of the college during the year included the erection of a dairy industry building, a memorial union, and a chemical engineering building. President, Raymond Mollyneux Hughes.

IRAK or IRAQ. See MESOPOTAMIA.

IRELAND. The smaller of the two main British Isles, with an area of 32,586 square miles; politically divided into Northern and Southern Ireland, the former consisting of the parliamentary counties of Antrim, Armagh, Down, Fermanagh, Londonderry, and Tyrone, and the parliamentary boroughs of Londonderry and Belfast; and the latter of the remaining 26 counties. The northern counties are known as Northern Ireland and are under a separate parliament and executive by the Government of Ireland Act of 1920 (see IRELAND, NORTHERN). The Southern counties constitute a self-governing dominion, known as the Irish Free State, under the treaty of Dec. 6, 1921. (See article, IRISH FREE STATE.) The total population of the Island June 13, 1921, was estimated at 4,485,000 as compared with 4,390,218 at the census of 1911. No census for all Ireland was taken in 1921. Statistics for Ireland as a whole are no longer available, but for the two divisions they will be found under their respective titles, IRELAND, NORTHERN, and IRISH FREE STATE.

IRELAND, NORTHERN. The northeastern part of Ireland, comprising six of the nine counties of Ulster: Antrim, Armagh, Down, Fermanagh, Londonderry, and Tyrone, and the two parliamentary boroughs of Belfast and Londonderry. Capital, Belfast.

AREA, POPULATION, ETC. The area of Northern Ireland, exclusive of water, is 3,351,446 statute acres (also given as 5238 square miles). According to the census taken in 1926, the population was 1,256,322, as compared with 1,250,531 in 1911, the date of the previous census. The estimated population as of June 30, 1927, was 1,253,000. The movement of population in 1926 was: Births, 28,162; deaths, 18,827; marriages, 7228. The population of the capital, Belfast, was 415,007 in 1926. The following are the latest statistics (1927) with respect to education: Elementary education, 1970 public elementary schools with 202,437 pupils on roll; secondary education, 70 schools with 9012 pupils; technical education, 55 technical schools and 88 other centres with over 23,000 pupils; higher education, Queen's University at Belfast, with 111 professors and lecturers and 1236 students in 1928.

PRODUCTION, ETC. Northern Ireland is distinctly an agricultural section. The pursuit of this occupation employs as many people as all other occupations combined. The principal products are potatoes, cattle, bacon and hams, butter and eggs, the exportable surplus being shipped to Great Britain. The yield of the chief crops in 1926 was: Oats, 292,730 tons, potatoes, 1,068,800 tons, turnips, 876,010 tons, flax, 6030 tons, and hay, 1,095,975 tons. The livestock in 1927 was: Cattle, 697,345; sheep, 484,067; pigs, 236,285; goats, 52,769; horses used in agriculture, 88,758; and asses, 8544. The two principal industrial enterprises are linen manufacturing and shipbuilding, both centred at Belfast. Other important manufactures are ropes and twines, tobacco, soaps, aerated waters, biscuits, spirits, hosiery, and underwear. No separate figures for commerce of Northern Ireland are available, be-

cause they are included in the general figures for the United Kingdom.

FINANCE. The revenue accruing to the Northern Irish Exchequer in 1926-27 amounted to £11,173,000 and the expenditure to £11,137,000. The revenue for the year 1927-28 was estimated to amount to £11,203,000 and the expenditure to approximately the same sum.

COMMUNICATIONS. In addition to 765 miles of railway, the country is served by various inland waterways, supplemented by 180 miles of canals.

GOVERNMENT. Northern Ireland has a local parliament with restricted jurisdiction; it forms an integral part of Great Britain and is represented in the House of Commons by 13 members. The district is subject to the same taxation as that of Great Britain. The Governor in 1928 was the Duke of Abercorn. The ministry was as follows: Prime Minister, Viscount Craigavon; Finance, H. M. Pollock; Home Affairs, Sir R. Dawson Bates; Labor, J. M. Andrews; Education, Viscount Charlemont; Agriculture, E. M. Archdale; Commerce, J. M. Barbour.

IRISH FREE STATE. A self-governing dominion of Great Britain, constituted under the Irish Free State Government Act of December, 1922, which embodied the terms of the treaty of Dec. 6, 1921. Capital, Dublin.

AREA AND POPULATION. The Irish Free State comprises about five-sixths of the total area of all Ireland. According to the census of 1926, the total area was 17,019,155 statute acres or 26,592 square miles. The population, according to this same census, was 2,972,802, as compared with 3,139,688 in 1911. The loss in population is almost entirely due to emigration caused by unsatisfactory economic conditions in the dominion. The movement of population in 1926 was: Births, 61,176; deaths, 41,740; marriages, 13,570; immigrants (1926), 10,638; emigrants (1926), 29,412. Dublin, the capital, had a population (within its registration area) in 1911 of 397,957. At the census of 1926, the population was 419,156.

The second report of the Irish Free State census of population for 1926, which was published in the fall of 1928, showed that 57 per cent of the population above 12 years of age was gainfully occupied. The numerical distribution of the Free State's gainfully employed population by occupations was as follows: Agriculture, 672,129; fisheries, 5753; mining and quarrying, 2599; other "producers," including makers and repairers, 186,617; transport and communications, 64,952; Public administration (excluding professional men and typists), 37,333; professions (excluding clerks), 55,441; commerce, finance, and insurance, 85,008; domestic service, 90,198; clerks, typists, and other gainfully employed occupations, 107,632.

EDUCATION. No later statistics for education were available than those given in the preceding YEAR BOOK, when there were 5636 schools in operation with an enrollment of 493,382 pupils and approximately 13,000 teachers; 284 secondary schools, with 25,510 students; and a university attendance of 3088 and a professorial staff of 269.

PRODUCTION, ETC. The Free State had 3,832,000 acres under crops in 1926, or about 22.5 per cent of the total land area; 8,416,000 acres of grass and grazing mountain land; and 7514 acres under trees and shrubs. On June 1, 1927, there were 4,048,000 cattle, 1,178,000 swine, 3,121,000 sheep,

186,000 goats, 318,000 horses (used for agriculture), 197,000 asses, and 19,000 mules. The area and production of the principal crops in 1927 were as follows:

CROPS: AREA AND PRODUCTION, 1927

Crop	Area ^b	Pro- duction ^c
Wheat	34	1,421
Barley	121	6,295
Oats	645	46,735
Potatoes	365	91,212
Turnips	183	3,478 ^a
Hay	2,183	4,992 ^a

^a Unit, long ton; ^b thousands of acres; ^c thousands of units—bushels except as indicated.

There was evidence of a gradual improvement in the fishing industry. The 1927 catch of all sea fish was officially estimated at 33,000 tons valued at £2,372,000. The mineral resources include: Coal, clay, copper ore, gravel and sand, igneous rock, limestone, ochre, umber, sandstone, and slate. The mineral resources had not been developed to any great extent. The principal industries were the preparation of dairy and meat products, hoot and shoe making, the manufacture of confectioneries, biscuits, and woollens, and brewing and distilling.

The completion of the hydro-electric project on the Shannon River near Limerick was expected to remedy an outstanding bar to industrial progress through the provision of cheap power. The Shannon works, which were to cost \$30,000,000 and provide 90,000 horse power in the initial stage of development, were progressing rapidly and the generators were expected to be ready to turn over toward the close of 1929. The capacity, however, was about twice that of the Free State's existing consumption, so that a very considerable amount of missionary effort was considered necessary in order to bring the domestic load up to the point where cheap industrial power would become a reality. The Electricity Commission appointed by the Government was (December, 1928) wiring houses in some 30 towns in Leinster Province, and owners were to be permitted to repay the cost of installation on an installment basis over a period of ten years. The system was to be extended later to approximately 100 towns of more than 500 population when the entire network for the Shannon scheme will have been completed.

COMMERCE. In the calendar year 1927, the exports of the Irish Free State were valued at \$214,701,000 and the imports at \$295,565,000. The adverse trade balance in that year was the smallest in the four years since separate trade statistics had been maintained, imports having declined slightly and exports having gained by nearly \$15,000,000 or 7 per cent as compared with 1926. Exports in 1926 were valued at \$200,087,000 and imports at \$295,896,000. The export price index of agricultural produce, the dominant factor in export trade, averaged 148.8 in 1927 as compared with 157.7 in 1926, so that the increase in the volume of cross-channel shipments was substantially more than the gain in value. Great Britain supplied 66.8 per cent of the imports in 1927 and received 84.6 per cent of the exports. Similar figures for the United States were 7.7 per cent and 1.0 per cent.

FINANCE. The Irish Free State budget proposals for the fiscal year ending Mar. 31, 1929, included the extension of the tariff on automotive imports to commercial vehicles and to all tires,

and an increase in the duty on sugar. Total expenditure for the fiscal year was estimated at £26,298,000, which compares with £26,080,681 for the 1927-28 year; of this amount, £2,235,000 was considered non-recurrent and was to be cared for from the loan fund. Ordinary receipts were expected to total £22,914,000, leaving a deficit of approximately £1,149,000, which was to be met by changes in the schedule of collection of the income tax, property tax, and the beer excise. Ordinary receipts in 1927-28 totaled £24,123,270, in addition to which the 5 per cent second national loan brought proceeds of £6,889,000; £2,500,000 of this was apparently appropriated for the redemption of short-dated bills, leaving a treasury surplus on Mar. 31, 1928, of £2,377,581 and outstanding temporary borrowings of £1,250,000.

The Currency Commission, appointed in 1926, to carry out the provisions of the currency reform, issued on Sept. 10, 1928, legal tender notes of the Free State in £1, £5, and 10-shilling denominations. The higher denominations of the new currency were not expected to be available for several months. The new tender was guaranteed by the Government and was convertible, pound for pound, into sterling.

COMMUNICATIONS. In 1927, 13,494 vessels of 9,262,000 net registered tons entered the ports of the Free State in the foreign trade, and 13,368 vessels of 9,282,000 tons cleared. The accompanying table gives the latest available statistics on railways in the country.

RAILWAY STATISTICS, 1926

Length of line	miles..	3,028
Length of tracks	do..	4,096
Locomotives	number..	826
Passenger cars	do..	1,553
Freight cars	do..	19,032
Average capacity	long tons..	8.3
Passengers carried	thousands..	24,174
Freight carried	1000 long tons..	4,140
Freight ton-miles	thousands..	231,539
Train-miles	do..	4,371
Gross receipts	£1000..	5,255
Passenger service	do..	2,091
Freight service	do..	3,164
Gross receipts equivalent	\$1000..	25,530

GOVERNMENT. The Irish Free State has a written constitution which provides that her status shall be similar to that of the Dominion of Canada. It has a coequal status with the other dominions of the United Kingdom, has complete control of its economic life, with a customs boundary right against all nations, including Great Britain and Northern Ireland. The Governor-General in 1928 was James MacNeill, appointed Dec. 6, 1927. The executive council as organized in October, 1927, was as follows: President, William T. Cosgrave; Vice President, Finance, Posts and Telegraphs, Ernest Blythe; Defense, Desmond Fitzgerald; Industry and Commerce and External Affairs, Patrick McGilligan; Education, J. Marcus O'Sullivan; Lands and Agriculture, Patrick Hogan; Local Government and Public Health, Richard Mulcahy; Fisheries, Finian Lynch.

HISTORY. After the rather hectic year 1927, with its general elections and the assassination of Kevin O'Higgins, the year 1928 seemed rather dull by comparison, although steady progress was made along economic lines. President Cosgrave visited the United States in January and early February, and sought throughout his wide and enthusiastic tour of the country to undo the work of the de Valera faction in undermining the

Government of the Free State. Mr. Cosgrave reiterated time and again the fact that Ireland had taken her place among the free nations of the world and her future lay in building up and strengthening the present system rather than tearing it down and demanding absolute freedom such as de Valera and his followers sought. Throughout the entire year relations with Northern Ireland remained pacific and the Free State Government took occasion to announce that it would not seek to unite the two sections of the island by coercive measures but expected such an occurrence to happen naturally in a few generations. Members of the Government also expressed publicly their satisfaction with the dominion status of the country. The sessions of Parliament were orderly and most of the time was spent working over government measures.

IRISH LANGUAGE AND LITERATURE.
See PHILOLOGY, MODERN.

IRON. See CHEMISTRY, INDUSTRIAL.

IRON AND STEEL. The iron ore mined in the United States in 1928, exclusive of ore that contained 5 per cent or more of manganese in the natural state, was estimated by the U. S. Bureau of Mines, at 62,151,000 gross tons, an increase of nearly 1 per cent, as compared with that mined in 1927. The ore shipped from the mines in 1928 was estimated at 63,244,000 gross tons, valued at \$154,491,000, an increase of 3 per cent in quantity and of 2 per cent in total value as compared with the figures for 1927. The average value of the ore per gross ton at the mines in 1928 was estimated at \$2.44, as compared with a valuation of \$2.47 in 1927. The stocks of iron ore at the mines, mainly in Michigan and Minnesota, apparently decreased from 10,104,673 gross tons in 1927, to 9,266,000 gross tons in 1928, or 8 per cent.

The Bureau of Mines estimates were based on preliminary figures furnished by producers who in 1927 mined about 99 per cent of the total iron ore. They showed the totals for the principal iron-ore-producing States, and, by grouping together certain States, the totals for the Lake Superior district and for groups of Southeastern, Northeastern, and Western States. About 85 per cent of the iron ore shipped in 1928 came from the Lake Superior district, in which approximately 52,467,000 gross tons were mined and 53,610,000 tons were shipped, increases of 2 and 5 per cent, respectively, as compared with the quantities mined and shipped in 1927. The ore shipped in 1928 was valued at the mines at \$133,543,000, an increase of 5 per cent.

These totals include the ore from mines in southern Wisconsin and ore shipped by rail as well as by water from all mines, but exclude manganiferous ores amounting to approximately 1,080,000 gross tons in 1928, and 1,300,084 tons in 1927 that contained 5 per cent or more of manganese in the natural state. The ore is chiefly hematite. The stocks of iron ore in this district apparently decreased from 8,850,638 gross tons in 1927 to 7,980,000 tons in 1928, or 10 per cent. The stocks at the end of 1928 were about 1,382,000 tons less than the average for the preceding 5 years. The shipments of iron ore by water from the Lake Superior district in 1928 (including manganiferous iron ores), according to the Lake Superior Iron Ore Association, amounted to 53,980,874 gross tons, an increase of 6 per cent as compared with these shipments in 1927. The aver-

age value of the ore at the mines in the Lake Superior district in 1928 was \$2.49 a ton; in 1927 it was \$2.50.

The Southeastern States, which constitute the second largest iron-ore producing area, including the Birmingham and Chattanooga districts, mined approximately 6,646,000 gross tons of iron ore in 1928, a decrease of 2 per cent as compared with 1927. The shipments of iron ore from mines in these States in 1928 amounted to 6,462,000 gross tons, valued at \$12,784,000, decreases of 6 and 8 per cent, respectively, in quantity and value as compared with 1927. The ore is mainly hematite; brown ore and magnetite come next in order. The average value of the ore produced in these States in 1928 per gross ton was \$1.98; in 1927 it was \$2.04. The stocks of iron ore at the mines in this group of States, mainly in the Birmingham district, increased from 873,539 gross tons in 1927 to 1,057,000 gross tons in 1928. These stocks were about 286,000 tons more than the average for the preceding five years.

The Northeastern States, which include the Adirondack district, New York, and the Cornwall district, Pennsylvania, in 1928 mined 1,980,000 gross tons of iron ore and shipped 2,114,000 tons, valued at \$6,596,000, decreases of 12 per cent in quantity mined, 7 per cent in quantity shipped, and 17 per cent in value of shipments, compared with 1927. The stocks of iron ore in this group of States decreased from 368,331 gross tons in 1927 to 217,000 gross tons in 1928. These stocks were considerably less than were usually carried over at these mines, being about 246,000 tons below the average for the preceding 5 years. The average value of the ore in these States in 1928 per gross ton was \$3.12; in 1927 it was \$3.53. By far the greater part of this ore was magnetite.

The Western States which ordinarily produce iron ore, in the order of their importance, are Wyoming, Utah, New Mexico, Colorado, Montana, and Washington. Occasionally California, Idaho, and Nevada contribute small amounts. All the ore from Wyoming, New Mexico, and Colorado and most of that from Utah is used for the manufacture of pig iron. Much of the remainder is used as a flux in smelting copper and the precious metals. It is estimated that the Western States mined and shipped in 1928 approximately 1,058,000 gross tons of iron ore, valued at \$1,568,000, a decrease of 2 per cent in the quantities mined and shipped but an increase of 2 per cent in value of shipments as compared with 1927. The ore comprises hematite, magnetite, and brown ore.

IMPORTS AND EXPORTS. According to the statistics of imports and exports compiled from the records of the Bureau of Foreign and Domestic Commerce, of the Department of Commerce, the imports of iron ore reported for the year ended Dec. 31, 1928, amounted 2,452,646 tons valued at \$5,428,019 as against 2,620,717 tons valued at \$6,068,283 in 1927. Exports were 1,282,306 tons valued at \$4,797,881 in 1928 and 898,793 tons valued at \$3,425,435 in 1927.

The accompanying table shows the quantity and value of the iron ore mined and shipped in the United States by the principal producing States. The figures for 1927 are final, but those for 1928 are subject to revision.

ESTIMATES OF IRON ORE MINED AND SHIPPED IN THE UNITED STATES IN 1928 AND ACTUAL OUTPUT IN 1927

District	Ore mined		Ore shipped			
	Gross tons	1928	Gross tons	Value	Gross tons	Value
	1927		1927		1928	
Lake Superior:						
Michigan	15,075,079	13,725,000	14,532,831	\$37,135,364	14,245,000	\$36,716,000
Minnesota	35,461,138	37,457,000	35,563,177	87,935,099	37,969,000	93,114,000
Wisconsin	1,091,118	1,285,000	937,935	2,567,078	1,396,000	3,713,000
	51,627,335	52,467,000	51,033,943	127,637,541	53,610,000	133,543,000
Southeastern States:						
Alabama	6,445,464	6,297,000	6,508,419	12,973,597	6,113,000	11,758,000
Georgia	50,312	91,000	50,312	147,068	91,000	259,000
Missouri	78,605	100,000	78,605	315,670	100,000	395,000
North Carolina	32,528	.....	32,528	81,753	.....	.....
Tennessee	121,914	130,000	121,220	274,620	130,000	290,000
Virginia	64,592	28,000	66,897	172,877	28,000	82,000
	6,793,415	6,646,000	6,857,981	13,965,585	6,462,000	12,784,000
Northeastern States:						
New Jersey	220,660	234,000	202,720	860,393	328,000	1,244,000
New York	853,159	724,000	936,850	4,568,224	764,000	3,041,000
Pennsylvania	1,170,435	1,022,000	1,124,883	2,559,916	1,022,000	2,311,000
	2,244,254	1,980,000	2,264,453	7,988,533	2,114,000	6,596,000
Western States	1,076,096	1,058,000	1,076,096	1,534,161	1,058,000	1,568,000
Grand Totals	61,741,100	62,151,000	61,232,473	151,125,820	63,244,000	154,491,000

PIG IRON. The production of pig iron in 1928 was exceeded in only five other years in the history of the industry, and three of those were the War years of 1916, 1917, and 1918. The total production for 1928 was 37,837,804 gross tons, an increase of 4.4 per cent as compared with 36,565,645 gross tons in 1927, and 40,361,146 tons in 1923 which was the record year in the industry. Prices, however, reached the lowest point since 1915 in mid-year, but recovered in the late months of the year to a point higher than any since the first half of 1927. The *Iron Age* composite average for July, 1928, was \$17.10, as against \$17.73 in February and March, and \$18.59 in December, which was the year's peak. The composite average for the year was \$17.67, the lowest for any year since 1915. According to estimates of the *Iron Age* the production was brought from below normal to 15 per cent above normal at the end of the year. Estimates of the world's pig-iron output in 1928 were 86,230,000 gross tons, or an increase of 1.1 per cent over the 85,270,000 tons produced in 1927, although it was 10.95 per cent more than the 77,720,000 tons produced in 1913.

STEEL. The high rate of pig-iron production was exceeded by the output of steel ingots in 1928, which far surpassed that of the previous year, the output amounting to 50,400,000 (estimated), as against 43,776,717 gross tons, in 1927. The estimated daily output of ingots reached a record in March, 1927, which was broken in October, when a new peak was established at 4,647,891 tons.

Although it was expected at the beginning of 1928 that the steel trade would recover to some extent from the recession of 1927 the degree of prosperity attained was beyond all expectations. Rated in figures, the year 1928 witnessed 86 per cent of possible production as compared with 75 per cent in 1927 and 81 per cent in 1926. During 1928 the industry made a new record in steel output, in spite of poor railroad demand, reached a high production record, maintained a stable market with a steady demand which permitted of more uniform and economical operation of mills, and an almost unprecedented scale of output in the summer months, with

production in December beyond all expectations. Toward the end of 1928 car orders and car-building programmes gave a new impetus to demands for steel, while on the basis of the year's demand the automobile industry took 18 per cent of the output as compared with the highest previous percentage of 14.5 in 1926 and for the first time in the industry took the lead in the consumption of steel. A feature of the 1929 situation was the important part taken by price advances and attempted advances. In order to get prices with a profit in them the expedient most resorted to, with varying degree of success, was the announcement of an advance and then the free booking of immediate business at the price previously prevailing, or putting a time limit on the receipt of specifications on lower-priced business.

In spite of the fact that railroad tonnages were not satisfactory, the building trade more than compensated for this shortcoming. The building volume was remarkable and the number of large contracts for structural steel during the year was notable. The estimated total of fabricating contracts reached approximately 3,250,000 tons, or 6 per cent above the high record of 3,060,000 tons in 1927. Large steel orders from agricultural implement works attracted considerable attention during the year, and it was probable that it was the best year the steel industry had known for that trade, with prospects encouraging for 1929. The automobile dealers together with manufacturers of agricultural machinery were largely responsible for raising the sheet output by a large margin, or close to 5,000,000 tons, as compared with 4,565,000 tons in 1926, the previous high record.

WORLD PRODUCTION. The accompanying tables from the *Iron Age* give the world's production of iron and steel for the year before the War and later years.

As judged by the exports of the six leading exporting nations of the world, the world consumption of steel did not expand in 1928. Estimates placed the combined exports of these nations at 20,500,000 in 1928, although final figures might increase the total slightly. Imports into these same six countries also fell off noticeably during the year, the estimated total being 6,

600,000 as contrasted with 8,100,000 tons in 1927, or a decrease of 18.5 per cent. These estimates did not include scrap, which in the case of American and British exports exceeded all recent records. The excess of exports over imports evident in former years was further increased during the year, indicating that the world's consumption of steel, particularly of the non-producing nations, had more nearly reached normal proportions. The excess of exports over imports in 1928 was 13,900,000 tons; in 1925 it was 10,190,000 tons. The outstanding feature in imports was the sharp decline in the German and British volume. American increase in steel exports for 1928 was 2,400,000 tons or the largest increase since the War.

TABLE OF WORLD PRODUCTION OF PIG IRON IN MILLIONS OF GROSS TONS

Country	1913	1926	1927	1928 *
United Kingdom	10.26	2.46	7.29	6.60
Germany	16.50	9.50	12.90	11.44
France	5.13	9.25	9.15	9.85
Belgium	2.45	3.35	3.69	3.79
Luxemburg	2.51	2.52	2.69	2.70
Saar		1.61	1.74	1.89
Russia	4.49	2.40	2.92	3.23
Poland		0.32	0.61	0.67
Norway		0.08	0.08	0.08
Sweden	0.73	0.49	0.41	0.35
Italy	0.43	0.50	0.53	0.50
Austria		0.37	0.43	0.45
Hungary	2.34	0.19	0.29	0.28
Czechoslovakia		1.07	1.24	1.51
Spain	0.42	0.50	0.60	0.61
United States	30.97	39.37	36.57	38.00
Canada	1.01	0.80	0.77	1.06
Australia	0.04	0.40	0.55	0.42
India	0.20	0.90	1.15	1.01
Japan	0.24	1.16	1.26	1.38
China		0.40	0.40	0.40
Total	77.72	77.67	85.27	86.23

* Partly estimated. Lorraine's output is included in Germany's in 1913, but in that of France since 1918.

TABLE OF WORLD PRODUCTION OF STEEL INGOTS AND CASTINGS IN MILLIONS OF GROSS TONS

Country	1913	1926	1927	1928 *
United Kingdom	7.66	3.60	9.10	8.59
Germany	17.33	12.15	16.06	13.96
France	4.61	8.30	8.14	9.25
Belgium	2.43	3.32	3.66	3.87
Luxemburg	1.31	2.21	2.43	2.51
Saar		1.71	1.86	2.05
Russia	4.76	3.08	3.53	4.10
Poland		0.78	1.23	1.28
Sweden	0.53	0.49	0.49	0.53
Spain	0.30	0.68	0.65	0.69
Austria		0.35	0.55	0.63
Hungary	2.59	0.20	0.46	0.47
Czechoslovakia		1.55	1.60	1.80
Italy	0.92	1.75	1.57	1.95
United States	31.30	48.29	44.94	51.65
Canada	1.04	0.78	0.92	1.24
Australia		0.35	0.52	0.50
India		0.52	0.57	0.44
Japan		1.48	1.70	1.68
China		0.20	0.20	0.30
Total	74.83	91.79	100.18	107.49

* Partly estimated. Lorraine's output is included in Germany's in 1913, but in that of France since 1918.

As in the past, Canada was the largest importer of American steel products in 1928, taking 41 per cent of the total, as compared with 38½ per cent in 1927 and 39 per cent in 1926. Exports to Japan in 1928 also increased, 14½ per cent of the American exports going to this market, as compared with 12½ per cent in 1927. An important development of the year was the institution of a joint effort, on a large scale, to increase American foreign trade in iron and steel. To cultivate the foreign markets more ef-

fectively, the Steel Corporation and the Bethlehem Company formed a common export organization, the Steel Export Association of America, thereby providing a single outlet for 75 to 80 per cent of the rolled steel shipped out of the country. Imports remained practically stationary for the year.

The output of steel in Great Britain in 1928 amounted to 8,525,100 tons, as compared with 9,097,000 tons in 1927. Iron production for 1928 was 6,611,300 tons as against 7,292,900 in the preceding year. There were 132 furnaces in operation at the end of 1928.

The iron and steel industry in France during 1928 was characterized by favorable production, sales, and profits, and an expanding domestic market, all of which were responsible for excellent conditions at the end of the year. Records were established in both the production of pig iron and the output of steel, the estimated figures being 10,100,000 metric tons for pig iron, and 9,300,000 metric tons for steel, as compared with 9,293,000 and 8,275,000 metric tons, respectively, in 1927. In the case of exports of iron and steel, the heavy movements during November and December, following the lockout in the German mills, brought the figures up for the entire year to compare favorably with 1927. The high production level reached at the end of the year would continue, it was pointed out, into 1929, since there was a heavy domestic consumption of fabricating and construction items and a stronger demand from the colonies, Turkey, and the Balkan States. Labor conditions were generally satisfactory, and strikes of minor importance; some wage increases occurred and others were expected because of the continued rise in living costs; and there was a continued shortage of common labor. Total exports of steel from France amounted to 4,490,000 tons.

According to estimates the production and export of steel in Germany in 1928 equaled the 1913 figures, Germany being second only to the United States in world production and world export. Production for the year 1928 was 11,804,330 tons, as compared with 13,102,528 tons in 1927. It was estimated that about 1,000,000 tons of this decrease could be attributed to the lockout which occurred in November. Orders on the books of the Western Steel Trust at the end of the year were 99 per cent of the average figure during the preceding business year.

For electric furnace development, see ELECTRICAL INDUSTRIES.

IRRADIATION, EFFECT ON PLANTS. See BOTANY.

ISOSTASY. See GEOLOGY.

ITALIA, FLIGHT OF. See AERONAUTICS; EXPLORATIONS.

ITALIAN LITERATURE. A survey of Italy's literary activity in 1928 disclosed a season accentuated by several polemics, a theatrical crisis, a wave of "journalistic literature," and the untimely death of the analytical novelist Italo Svevo.

The current polemic on the technique of prose creations, undertaken by a group of young writers (Angioletti, Flora, Perri, and others), had its note of interest and carried with it a modest exchange of opinions and courtesies as to whether narrative art of the future should base its creation on the foundations of literary tradition and history, or else was to find its medium in introspection, in high-powered "cerebration" with

complete destruction of all "stilted" and "abortive" conventionalities of past schools and theories. The controversy closed with no perceptible influence made on the literary groups in Italy, and aside from having furnished interesting subject matter for several literary journals it was a useless one.

The theatrical crisis centring on the cinema versus legitimate drama, foreign drama versus native drama appeared to be more alarm than general evil. The *Giornale dell'Arte* (Milan) took up in detail the pros and cons as to the drop in box-office receipts of the legitimate stage productions as compared with the increase in those of the motion pictures, the decrease in number of native drama productions as compared to the increase in foreign productions and adaptations. From these articles by leading dramatists and actors it may be inferred that for the most part Italian dramatists were not viewing the situation with alarm considering the fact that if the crisis existed in Italy it existed also to a marked degree in countries throughout the world. The cinema flourished this season in Italy, as also in France, in America, everywhere. Nowhere had the attendance for the legitimate drama dropped to an alarming degree; not even in Italy considering the high price of admission for the theatre. The crisis, if nothing else, brought the Italian dramatist *vis à vis* with the fact that the "psychology of the theatre crowd" was to be taken more and more into consideration and that both theme and technique must undergo revision and readjustment.

The publication in book-form of journalistic articles by highly organized publishing houses enjoyed a most ambitious and strenuous season. The authors, especially the most popular, could not keep up with the demand for more material and so found it convenient to compile, revise, and publish their newspaper contributions. This wave of "journalistic literature" was the revelation of a delicate and wholesome humor on the part of distinguished *littérateurs*; their "columns" possessed literary qualities of the first order. One is almost tempted to say that this genre has given rise to the school of contemporary humor in Italy. To mention a few of these books, first in order come two of Massimo Bontempelli. *La donna del Nadir* (Milan) consists of a potpourri of impressions made on current topics ranging anywhere from poker to ethics. His other book, *Donna nel sole, ed idilli* (Milan), is a collection of sixteen short stories worked in delicate satire and touching on the element of mystery and fantasy. These articles were resuscitated from the newspaper files of 1922-27. Arturo Lanocita in his *Scrittori del tempo nostro* (Writers of Today; Milan) and Lucio D'Ambra in *Trent'anni di vita letteraria* (Thirty Years of Literary Life; Milan), two volumes of which were published (*La partenza a gonfie vele* and *Il viaggio a furia di remi*), present studies and interviews on the leading men of letters in Italy and abroad. Under this category come three books written on America: *Vita d'America* (Life in America) and *New York ciclone di gente* (New York a Cyclone of People), by Arnaldo Fraccaroli; *Scoperta dell'America cattolica* (Discovery of Catholic America), by Silvio D'Amico. The title of the last book, taken on the occasion of the Eucharistic Congress at Chicago, misleads as to the content which in reality is a study of the American people. Curiously enough both Fraccaroli and D'Amico were

play-wrights and journalists and their books bear marked resemblances both in observations and presentation of studies. Both authors view America optimistically. They have presented a series of pictures taken from life plus the dramatic touch: a series of short, swift-moving one-act episodes on the life, the morals, and the culture of American people.

September witnessed the passing of Italo Svevo, better known among his friends by the name of Ettore Schmitt, paint merchant of Trieste. (See his Biography.) His work as a novelist was just attracting universal criticism when death overtook him in an automobile accident, thus depriving him of the opportunity of defense of his theses in the analytical and psycho-analytical novel. His work consists of three novels only, yet he had ushered in the analytical school in Italy, and for that matter anticipated the European school, long before James Joyce, Marcel Proust, and Valéry Larbaud attained fame. It suffices to call attention to the act that Svevo's masterful novel, *A Life*, was published in 1893 and *Senility* in 1898. Italo Svevo waited a lifetime for the laurels that went to the others in the field that he unconsciously anticipated. In 1923 he published the *Conscience of Zeno* which received favorable criticism in Italy but failed to cross the geographical boundaries until James Joyce, his personal friend and a resident of Trieste, Benjamin Crémieux, Prezzolini, and Larbaud, combined to focus the world's attention on his art.

FICTION. A wealth of novels was published during the year, a record for fiction. With here and there a favor cast for bizarre themes the public as a whole leaned decidedly toward the old order of fictional literature for spiritual enjoyment. Deledda, Brocchi, Vivanti, Chiesa were responsible for the "best sellers," while Viani, Campanile, Perri, Bontempelli furnished the shocks and the headaches. The Nobel Prize of 1926, awarded to Grazia Deledda, seems to have been a timely honor for over a score of years' toil and productiveness in prose literature. Her contribution in 1928, *Il vecchio e i fanciulli* (The Old and the Young; Milan), is a tale of country folk molded out of simplicity and local color. It is representative of all of Deledda's "types," and the author seems to breathe into her characters something of her own modesty and sincerity of purpose. In connection with this type of regional novel, a word could be said with reference to Marino Moretti's recent book, *Il trono dei poveri* (The King of the Poor; Milan). This novel bears marked resemblance to Deledda's simple treatment of subject matter, with exception, however, that Moretti is the champion of the destitute and the helpless as against Deledda's idealization of the poor but not helpless. Virgilio Brocchi, who for many years has fondled the theme of the "eternal triangle," whose whole output has always been reflective of optimism, presents another "triangular" novel in two long volumes, *Il sapore della rita* (A Taste of Life; Milan). This time, however, Brocchi has gone to the opposite of his optimism. Anne Vivanti offers as her annual novel, *Mea culpa*, a pseudo-political theme centring about a girl Sinn-Feiner and an Egyptian patriot—a love story with a cinematographic setting that accounts for some of the novel's popularity. In spite of a few shortcomings there is always the redeeming side of Vivanti's writing: spontaneity and freshness of style,

"dashing" episodes, and dramatic situations.

To Francesco Chiesa go the highest honors for the dozen or so "prize novels" of the year (not without some differences of opinions in the literary circles) for his novel, *Villadorna* (Milan), winning the Mondadori Academy Prize of 10,000 lire. Francesco Chiesa's meteoric rise in popularity was contingent almost exclusively on the merits of *Villadorna* in spite of the fact that not a few of his previous creations are known universally in translations (see *Romantic Review* vol. xx, No. 1). The novel is a bucolic tale embracing a brief episode in the life of a few beings, —an idyll in prose suggestive of the serenity found in Vergilian poetry. Francesco Chiesa has expressed himself here in the Manzonian creed: the individual is to serve and not to enjoy; he is to preoccupy himself in aiding the afflicted; he is to withdraw from materialistic cupidity and turn to religion and meditation.

To Bianca de Mai went the prize of the *Trenta* (thirty leading publishers' prize) for her novel *Pagare e tacere* (Pay the Penalty in Silence; Milan), a masterful characterization of the heroine of the novel, Theresa Bardi. The creation is recommendable for its sound structure, its well-worked details, and its keen penetration in humanity. Giuseppe Fanciulli wrote the best novel of the year for youths, *Fiore* (Florence), receiving the Bempored Prize.

Pitted against the foregoing novelists of the conventional order, more or less, may be considered Lorenzo Viani, *littérateur* and jack-of-all-trades (barber, poet, painter), who presents an enigma in the literary output of 1928 in his novel, *sans méthode et sans forme*, *Angiò, uomo d'acqua* (Angiò, Man of the Seas; Milan) in which myriads of sea people pass in display before our eyes; their salient characteristics sharply outlined: brutality, superstition, affection, hatred. Another puzzling author is Achille Campanile, who during the year threw Italian critics into confusion with respect to his two books published recently. Although a few commend his humorous novels, the usual run of adjectives from the critics' mouths had an unsavory sound. The public, however, quickly purchased fifty thousand copies of his first novel, *Ma che cosa è quest'amore?* (What Is This Thing Called Love?; Milan). His second novel, *Se la luna mi porta fortuna* (If the Moon Brings me Luck; Milan), abounds in comic situations and libertine observations. Francesco Perri's *Emigranti* (Milan) was another novel that comes under no particular category or school. It received a prize of 10,000 lire from the Mondadori Academy. The story of the return of the emigrants is kept at a point of incandescence from cover to cover, teeming with effusions and extravagant emotions. Withal, it carries an undertone of fatality.

For a study on the trend of the contemporary novel, Giacomo Antonino's *Il romanzo contemporaneo in Italia* (Aquila) should be read, discussing, as it does, Panzini, Deledda, Pirandello, De Roberto, Mario Puccini, Rosso di San Secondo, Vergani, Saponari, and minor novelists. The studies are intentionally informative rather than critical. The conclusion, although giving an accurate résumé as to the merits of the contemporary novel, is pessimistic and negative with regard to the future.

SHORT STORIES. Three volumes of short stories were especially popular during the year. *La don-*

na nel sole e altri idilli, a collection of sixteen short stories, has been discussed above in the paragraph on journalistic literature. Guido Milanese's *Quando la terra era grande* (When the Earth Was Large; Milan) includes stories based on the reminiscences of the author's service in the navy. While they lack plots of palpitating interest (a few chapters are travelogues), they possess by contrast abundant humor. At times the prose is so delicately worked out that it reads like poetry. From the prolific pen of Luciano Zuccoli came *I ragazzi se ne vanno* (The Children Scamper Away, a novelette; Milan), together with five short stories (a few are reprints). *I ragazzi se ne vanno* offers a psychological study on the naïveté and the innocence of adolescence. The rest of the stories in this volume are delightful for their originality of theme and for their sparkling style. Giuseppe Morpurgo, novelist and short-story writer, published *Le più belle novelle italiane dai sette Savii a Pirandello* (Milan), containing a selection of short stories representative of every century of Italian literature. Yet the volume makes a useful handbook with notes and comments on the writings of the greatest of the Italian *novellieri*.

THEATRE. The activity revolving about the theatrical crisis, discussed in the introductory paragraph, did not bring a single outstanding production. At best the season has been enlivened by new plays and revivals of dramatists of long standing, Pirandello, Chiarelli, Sem Benelli, Nicodemi, Lopez, and others. In *La nuova colonia* (The New Colony: Florence), Pirandello digressed somewhat from the drama of "art creates character." His theme here was the masses versus laws and conventions. The play had the usual Pirandellian success. Luigi Chiarelli, author of *The Mask and the Face*, the nearest approach to a dramatic sensation of the past decade, continues in the theatre of caricature and of the grotesque in *Jolly*. Sem Benelli, the author of *The Jest*, found it profitable to revive his *Ritorna della Gorgona*, first staged 15 years previously. Dario Nicodemi, the most successful of Italian producers, contributed as his play of the year, *La madonna*, in no way a departure from his list of good plays. It deals with the theme "in love with love" and "right you are if you think so." Sabatino Lopez, author of the unforgettable *Gli ultimi zingari* (The Last of the Gypsies—Strolling players) contributed a "hit" in *Signora Rosa*, a play spun on the frailties of reality, heart beats, and intricate emotions. Lopez continued in this play his drama of subtleties and reflexes. Enrico Corradini, the ultra-nationalist, waited two years to see the production of his *Giulio Cesare* published in 1926 at Milan. Several gala performances of the play were given in the open-air theatre at Taormina. Caesar is depicted by Corradini as being the greatest of all heroes, a complex and versatile genius, little understood by the Romans. Anton appears in this tragedy as an opportunist, Cassius a resentful egotist, and Brutus a sentimental nonentity. Another historical play (inspired by Fascism) was G. Cassi's *L'esule di San Casciano* (The Exile of San Casciano; Florence) written in commemoration of the fourth centenary after the death of Niccolò Machiavelli. The play, in the form of a dramatic poem, elaborates on the life and the milieu of the Florentine Secretary. Historically the poem offers a résumé of the salient events on the political aspects of Italy under the de' Medici. The

merits of the play rest in the sympathetic and forceful characterization of the "Supreme Politician," forerunner of modern nationalism.

Foreign plays and adaptations came for the most part via France (Rostand, Bernard, Guitry, Amiel). Shakespeare, Ibsen, Bernard Shaw had much popularity. From America *Broadway* and the musical comedy *Rose Marie* played to capacity audiences.

A critical study on the contemporary theatre, Giuseppe Ruberti's *Storia del teatro contemporaneo* (Bologna), appeared in three volumes, being a critical survey of the European drama with particular study of the Italian theatre with its cross-currents into the theatre throughout the world.

POETRY. Of the usual three or four books of poems published monthly, one especially stands in relief: *I canti dei goliardi* (Milan) by Corrado Corradino, revised and rearranged with a critical preface and exhaustive bibliography by Francesco Pico, consists of *ballades* and *rondeaux* translated from poems and legends on the mediæval students who followed a Bacchic and carnal philosophy. Another book of fine poems, *Il volto nemico* (The Enemy's Face; Ancona) was contributed by Giorgio Umami who divides his time at present between researches in biological sciences and studies in poetry. The poems contained in this volume are couched in a philosophical vein and reflect the author's love for nature. The structure for his meter is disciplined, possessing elementary melody but little nuance. Vincenzo Gerace earned the title of poet laureate for the year, critics disagreeing, for his *La fontana nella foresta* (Milan), a mixture of lyricism and mysticism. Mention should be made of an *Anthologie de la poésie italienne* (Paris), poems compiled and translated from the Italian by Lionello Fiumi in coöperation with the "italianisants." Signor Fiumi, erstwhile Italian poet who resided in Paris, undertook a huge task but certainly a very useful one in the preparation of this anthology. More literary ambassadors of this type are needed to help universalize Italian literature. The French press expressed gratitude for a book that brings within reach the best poems of Italy's poets of the day.

For a critical study of the poets Salvatore di Giacomo, Trilussa, Marinetti, and Govoni, Paolo Orano's *Contemporanei* (Milan), dealing with poetry of the dialects and poetry of the futurists, may be read.

VARIA. The Vincenzo Monti centenary celebrated during the year was fruitful in studies and researches made on the poet. Following is a list of the most important works (1927-1928): *Poésie* with an introductory essay, notes, and comments, by Francesco Flora (Florence); *Epistolario di Vincenzo Monti*, a collection of letters with notes by Alfredo Bertoldi (Florence); *Le più belle pagine di V. Monti*, selected by U. Fracchia (Milan); *Tragedie, Poemeti, Liriche*, compiled by G. F. Gobbi (Milan); *Liriche scelte, Cantiche, Canti e poemi scelti*, in three volumes, selected poems of Monti by G. Peppi (Signorelli); *Gemme liriche e La Feroniade*, with introduction and notes by G. Natali (Palermo); *V. Monti, la vita, l'opera, i tempi* (The Life, the Work, and Times of V. Monti), by Enrico Bevilacqua (Florence); *La vita e l'opera di V. Monti* (The Life and Works of V. Monti), by G. Bustico (Trevisini); *V. Monti e Giuseppe Piazza*, by Carmelina Nasselli (Palermo).

Tolstoi's centenary was celebrated with much distinction judging from the ceremonies through Italy. An exhaustive bibliography was compiled in connection with this centenary consisting of over five hundred studies made on the great Russian by Italian, Russian, French, German, and English scholars. For the list and other comments, see *Fiera letteraria* in its September issues. Arturo Lancellotti published *Tolstoi intimo* (Rome). Professor E. Lo Gatto, of the University of Naples, published the first of four volumes of the *History of Russian Literature*. The volume published deals with Russian literature from the period of conversion to Christianity (Eleventh century) to the reformatory period of Peter the Great (sixteenth century). Professor Lo Gatto also published a study of Russian literature in the twentieth century, *La letteratura russa, secolo XX* (Home).

The editor Formiggini of Rome published an Italian "Who's Who" *Chi è?* In the notices on the important women the date of birth is omitted as a special courtesy. Antonio Carpi, the blind twenty-four-year-old scholar, made a commendable study of the most representative *littérateurs* of modern times in his book *Rappresentanti più noti della letteratura moderna* including such names as, Oriani, Goethe, Pirandello, Tolstoi, Tozzi, France, Unamuno, and others. Carpi had won the esteem of the leading scholars of Italy for his admirable interpretation of these European men of letters. The chapters on Pirandello and Goethe (discussion of Faust) were especially interesting for their lucid evaluations of the art of these two geniuses.

In France, Benjamin Crémieux published what appeared to be the best foreign study on contemporary Italian literature, *Panorama de la littérature italienne contemporaine* (Paris). It presents a keen analysis of contemporary culture. The regional classification of the authors makes an interesting outline, although it does tend to disregard the actual universality of some of their creations.

See also PHILOLOGY, MODERN.

ITALIAN SOMALILAND, sō-mā'lelānd. A colony and three protectorates of Italy, making up the territory that extends along the east coast of Africa from British Somaliland and Kenya Colony to the Juba River. Area, approximately 405,000 square miles; population, about 1,000,000 (about 1000 Italians). The colony was formerly known as Benadir, but the official title is now Italian Somaliland. It extends from 4°40' N. latitude to the mouth of the Juba River and is divided into three administrative districts. Mogadiscio is the capital with a population of about 20,700. The three protectorates are the Sultanate of the Mijertins, under an Italian commissioner who resides at Alula; the Territory of the Nogal between Cape Gabee and Cape Garad; the Sultanate of Obbia, extending from the northern boundary of the colony of Benadir to Cape Gerad, under an Italian commissioner, resident at the capital, Obbia. The chief occupations are agriculture and stock raising, the latter engaging about half the population. The principal exports are cotton, amber, iron, myrrh, copper, tobacco, and grains. The principal imports are cotton and cotton yarn, textiles, coffee, petroleum, rice, tobacco, sugar, fats, soap, cereals, flour, and preserved products. The total exports in 1926 amounted to 29,031,366 lire; the total imports, 129,441,852. The budget of Italian Soma-

liland for the year 1927-28 was as follows: Revenue proper of the colony, 21,240,000 lire; State contribution, 55,515,250 lire; extraordinary revenue, 3,750,000 lire; total, 80,505,250 lire. Civil expenditure, 3,750,000 lire; military, 30,579,100 lire; extraordinary expenditure, 7,649,000 lire; total, 80,505,250 lire; revenue and expenditure, 1928-29, 75,255,250 lire. The governor in 1928 was Count Cesare de Vecchi (appointed in 1923).

ITALO-TURKISH TREATY. See ARBITRATION, INTERNATIONAL.

ITALY. A constitutional monarchy of southern Europe, comprising, besides Italy proper, the islands of Sardinia, Sicily, Elba, and some 70 other small islands, together with the territory on the eastern shore of the Adriatic acquired as a result of the Treaty of St. Germain, and arrangement with Jugo-Slavia in 1920. Capital, Rome.

AREA AND POPULATION. The area of Italy before the war was 110,632 square miles, with a total population on Jan. 1, 1915, of 36,120,118. The area as a result of the survey made at the time of the census of 1921 is 119,710 square miles and the population according to that census, 38,756,433; estimated in 1927 at 40,548,683. The movement of population in 1927 was: Births, 1,121,072; deaths, 631,897; marriages, 296,293 (1926). The total number of emigrants in 1926 was 263,810, of whom 122,496 went to countries overseas. In 1926, 177,619 Italians returned to Italy, 39,524 coming from the United States and Canada. The cities with a population of more than 175,000 as estimated on Jan. 1, 1926, were as follows: Bologna, 227,447; Catania, 263,030; Florence, 265,799; Genoa, 333,320; Messina, 187,996; Milan, 879,424; Naples, 852,362; Palermo, 419,153; Rome, 758,569; Turin, 520,164; Trieste, 242,059; and Venice, 203,665.

EDUCATION. The latest figures available on education in the primary schools were those for 1924-25, when there were 3,644,606 pupils enrolled in the public elementary schools. In other institutions of all grades, other than infant schools, there were about 525,000 pupils enrolled. In the infant schools (5828) there were 27,192 children. In 1928 there were 25 universities, including four which were free, besides university courses given in certain lyceums. There were, in addition, several institutions of university rank, namely, the Institute of Higher Education at Florence, the Royal Scientific and Literary Academy at Milan, and the Higher Technical Institute of Milan. There are higher institutions for commercial education at Rome and other cities; also higher schools for agriculture and engineering, and various schools for technical education.

PRODUCTION, ETC. Of the total area of Italy, 32,761,000 acres, or 43 per cent, were under crops in 1926, 16,864,000 acres under permanent meadow and pasture, 5,299,000 acres in trees and shrubs, and 12,285,000 acres in woods and forests, 3,091,000 acres were uncultivated productive land, and the remainder unproductive land. In 1927 increased efforts were directed by the Government toward improving agricultural methods and increasing crops, especially wheat. This so-called "Battle for Grain" had for its object the reduction of cereal imports by better culture, and also by substituting in consumption rice and other articles produced in large quantities in Italy. The Government rendered assistance by premiums upon crops, loans at low rates of in-

terest, postponement of taxes, and sale of fertilizers at fixed prices, which broke the monopoly existing in the fertilizer industry. Instruction was also given in more scientific methods of operation. The crops of 1927, however, because of very adverse weather conditions, were in general inferior to those of recent years, especially as compared with the exceptional figures of 1926. Rice and fruits were the only important products showing increased yields.

CROPS: AREA AND PRODUCTION

Crop	Area (thousands of acres)		Production (thousands of units—bushels, except as indicated)	
	1926	1927	1926	1927
Wheat	12,146	12,320	220,642	195,808
Rye	299	307	6,496	5,937
Barley	587	583	11,023	9,443
Oats	1,231	1,203	40,648	30,720
Corn	3,769	3,755	118,090	87,378
Rice	366	351	33,314	34,102
Potatoes	871	874	84,913	71,476
Sugar beets	197	219	2,297 ^a	2,026 ^a
Olive orchards	5,670 ^b	5,668 ^b	49,106 ^c	39,110 ^c
Grapevines	10,601 ^b	10,574 ^b	979,440 ^d	941,769 ^d

^a Unit, metric ton. ^b Includes land carrying also one or more other crops. ^c Unit, gallon of oil. ^d Unit, gallon of wine.

According to the industrial census of Oct. 15, 1927, there were in Italy 728,150 establishments employing 3,965,500 employees. The number of employees by principal industries was as follows: Textiles, 636,687; transport and communications, 514,729; clothing, 490,789; machinery and related industries, 468,699; foodstuffs, 339,520; construction, 328,734; lumber and woodworking, 284,931.

The total value of mineral production, proper, in Italy in 1926 was \$29,773,000. The value of the principal metallurgical and mineral products in that year was as follows: Pig iron, \$14,383,000; crude steel, \$61,286,000; coke, \$7,031,000; mercury, \$3,639,000; lead, \$3,685,000.

Toward the close of the year it was announced that the Italian Government was launching an extensive scheme having for its prime objects the increase of population and the improvement of economic and agricultural conditions in the country. It recommended the increase of native population by approximately 10,000,000 in order to give the country a domestic consuming public great enough to make profitable all kinds of domestic industrial production; and, by bringing under cultivation—forcibly if necessary—all the potentially agricultural land of the country, to render the nation independent of the import of staple food supplies. At the same time it aimed to supply agrarian employment for a large part of the people overcrowded and underemployed in the urban centres, and to supply foodstuffs and employment for the increasing population. An important though subsidiary phase of the plan, it was hoped, would be the practical elimination of unemployment for a considerable number of years while the improvements are being carried out. The programme was expected to cost \$392,250,000 and to require fourteen years to carry out.

COMMERCE. Although the paper currency value of both imports and exports registered a decline in 1927 when compared with the preceding year, values expressed in dollars, as a result of the appreciation of the lire, were considerably higher in both cases with \$1,051,055,000 for imports and \$805,723,000 for exports. The import excess was \$245,332,000, as compared with \$280,638,000 in

1926. Export values (in dollars) were the highest ever attained, and imports the highest since 1920. The Government increased its efforts to improve the trade balance by endeavoring in every way to decrease imports, especially of luxury articles or goods which could be produced advantageously in the country itself, and to increase domestic production. Redoubled efforts were made to expand the hydro-electric industry, thus reducing the import requirements of coal.

For some years the United States had been the leading country in the import trade of Italy. In 1927 it furnished \$204,252,000 worth of goods, or approximately 19 per cent of the total trade. Germany held second place, furnishing about 10 per cent, followed by Great Britain, France, and British India. Germany, which for some years had held first place in the export trade of Italy, took in 1927 about 14 per cent of the total. The next most important market was the United States with about 10 per cent, followed by Great Britain, Switzerland, France, and Argentina. The articles making up the bulk of the imports from the United States were grain, cotton, petroleum products, lumber, metals, and coal. The articles constituting the bulk of the export trade with the United States were cheese, nuts, olive oil, fruits, tomato paste, rayon, felt hats, and wool. During 1928, foreign trade suffered from the high stabilization point of the lire. Imports increased and exports decreased, resulting in an adverse trade balance of nearly 7,000,000,000 lire as compared with 5,000,000,000 in 1927.

FINANCE. Preliminary figures for the fiscal year 1927-28 showed total receipts at 19,623,000,000 lire, as compared with 20,979,000,000 lire for 1926-27, a decrease of 1,356,000,000 lire. These receipts were, however, some 3,000,000 lire above budget estimates. The Government announced a surplus of revenues amounting to 227,000,000 lire. Italian budget estimates for the fiscal year, 1928-29, according to press articles, showed an estimated surplus of 271,000,000 lire. The estimates for both revenues and expenditures indicated a considerable reduction from the estimates of the 1927-28 period and a still greater decline from the actual returns for the 1926-27 period. The estimates for 1928-29 placed revenues at 17,643,000,000 lire and expenditures at 17,372,000,000 lire, whereas the corresponding estimates for the 1927-28 period were 19,513,000,000 lire and 18,747,000,000 lire, respectively. The final returns for the 1926-27 fiscal year were: Effective revenues, 21,450,000,000 lire; effective expenditures, 21,014,000,000 lire. The public debt at the close of 1928 was 86,500,000,000 lire.

COMMUNICATIONS. Most of the railways in Italy are controlled and operated by the Government. On Oct. 1, 1927, the total length of the network of State railways was 10,300 miles; 356 miles of railway were in course of construction; 775 miles of electrified line were in operation; and 215 miles were in the course of being transformed for operation by electricity. In addition, in 1926, there were 3055 miles owned by private companies, most of these being local lines of minor character. There was a considerable increase in train mileage during the fiscal year 1926-27 compared with the preceding year, as regards both passenger and freight trains. Volume of traffic and gross receipts had increased markedly in recent years.

STATISTICS OF GOVERNMENT RAILWAYS, YEARS ENDED JUNE 30

	1926	1927
Length of line .....miles..	10,251	10,303 ^a
Locomotives .....number..	7,035	8,893 ^a
Passenger cars .....do...	9,511	9,864 ^a
Freight cars .....do...	154,558	151,332 ^a
Passengers carried .....thousands..	113,570	117,680
Freight carried ^b .....1000 metric tons	65,275	64,982
Ton-miles .....millions..	8,022	7,692
Train-miles .....thousands..	37,975	40,427
Gross receipts .....1,000,000 lire..	4,865 ^c	5,092 ^c
Passenger service .....do....	1,639	1,652
Freight service.....do....	3,159	3,190
Gross receipts, equivalent \$1,000,000	191	222

^a Dec. 31.

^b Not including livestock.

^c Including miscellaneous receipts not shown separately.

A new high record was established in 1927 in the number and tonnage of ocean-going vessels (except sailing ships) calling at, and the cargo loaded and discharged in, the ports of Italy. However, the number of passengers both embarking and disembarking in Italian ports underwent a decline from the high level recorded in 1926. There were in 1926 237,987 vessels of 63,552,570 tons entered the ports of Italy in the foreign and domestic trade and 238,055 vessels of 63,644,516 tons cleared.

ARMY AND NAVY. Liability to military service beginning at the age of 20 and lasting for 19 years is compulsory and universal. The strength of the active army in 1927 was 17,684 officers and 283,200 men. See MILITARY PROGRESS.

The accompanying table from the *Statesman's Year Book* for 1928 shows the classification of the navy in 1926 and 1927.

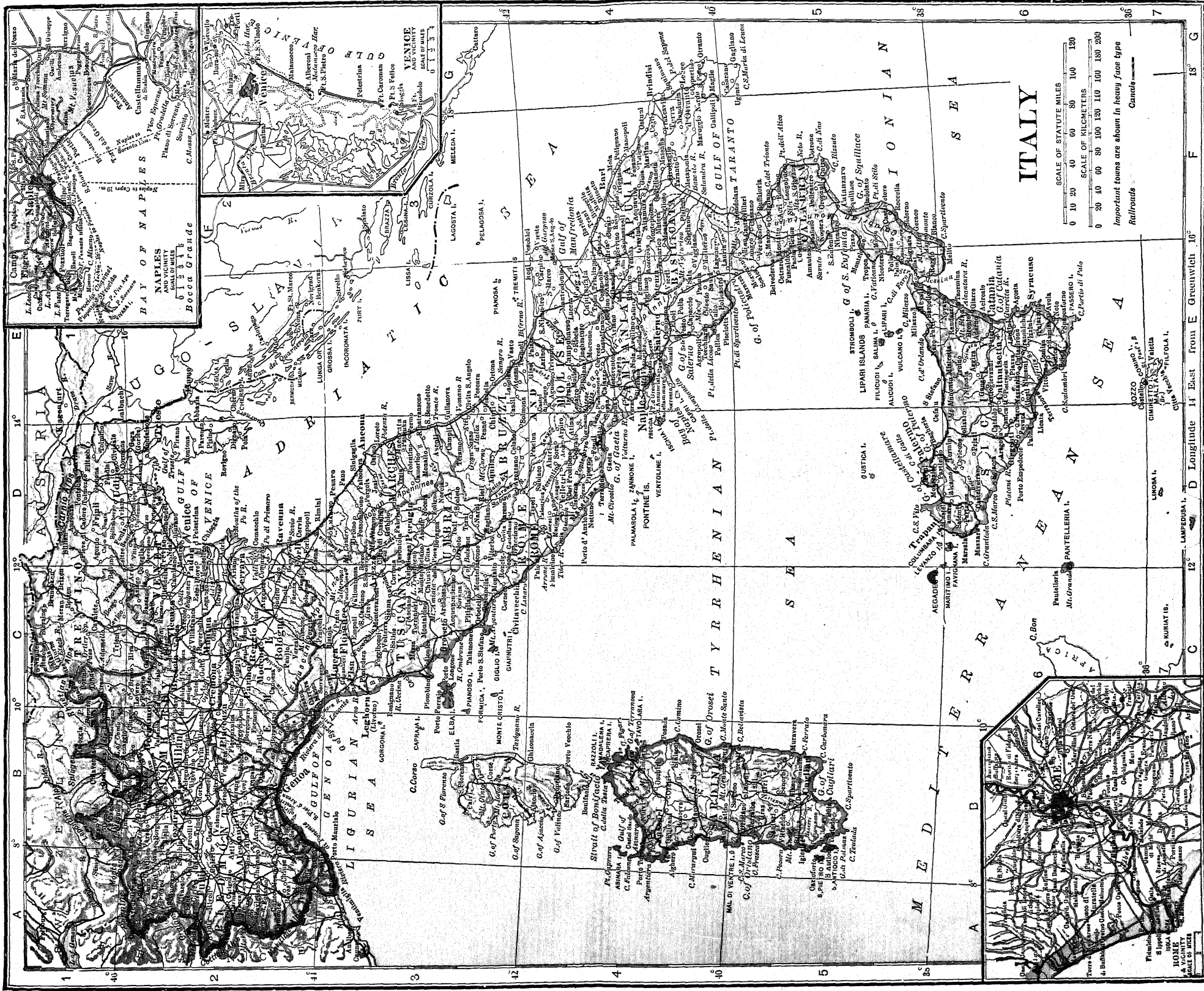
	Completed at end of	
	1926	1927
Battleships	5	5
Battleships for Coast Defense	1	3
Armored cruisers	3	3
Light cruisers	9	9
Flotilla leaders and destroyers	65	73
Torpedo boats	58	55
Submarines	42	45

See NAVAL PROGRESS.

GOVERNMENT. Executive power is vested under the constitution in the King, who acts through a responsible ministry, and legislative power in the King and Parliament, the latter consisting of two chambers: a Senate, which on Jan. 1, 1927, had 373 senators and 10 members of the royal family, and a chamber of deputies, with 535 members. (See below.) The King in 1928 was Victor Emmanuel III, born Nov. 11, 1869, who succeeded his father, Humbert I, July 29, 1900. The cabinet was composed as follows: Head of the Government, Prime Minister, Secretary of State, Foreign Affairs, Interior, War, Marine, Aeronautics, Corporations, Benito Mussolini; Colonies, Luigi Federzoni; Justice, Alfredo Rocco; Finance, Count Volpi; Public Instruction, Pietro Fedele; Public Works, Giovanni Giuriati; National Economy, Giuseppe Belluzzo; Communications, Costanzo Ciano. On December 18, Mussolini assumed the portfolio of Colonies on the resignation of Luigi Federzoni.

HISTORY

The year for Italy was marked by internal reform and a comparatively quiet year in external affairs. The vexing problem of Tyrol is discussed under AUSTRIA, *History*. The outstanding event



ITALY

SCALE OF STATUTE MILES

0 10 20 40 60 80 100 120

SCALE OF KILOMETERS

0 20 40 60 80 100 120 140 160 180 200

Important towns are shown in heavy face type

Canals

Railroads

in internal affairs was the virtual abolition of parliamentary government and the substitution thereof of control by the Grand Council of the Fascists. The first step was the approval by the cabinet of a measure on February 20, reducing the number of members in the Chamber of Deputies from 535 to 400. The candidates were to be selected by the associations of employers and employees and then submitted to the Grand Council. From the list, which was to include about 800 names, the Grand Council was to select 350 members and add fifty more from the cultural and spiritual leaders of the country, who, of course, must be ardent advocates of Fascism.

The power of the Grand Council to select the members of the Chamber of Deputies was interpreted in many quarters as meaning that it also had the power to select a successor to Mussolini, when he should step down from control of the Government. The list as finally approved was to be offered to the electorate, not the old electorate based on universal suffrage, but one selected because of the size of families, the amount of taxes paid, connection with the Government, or religious affiliations. There was to be no opposition list and the handpicked deputies must be accepted, or, if unsatisfactory, certain changes may be made if the Grand Council so wills it.

Thus passed in Italy the entire principle of free government and untrammelled elections. Mussolini, in defense of the new system, declared that the principle of popular sovereignty was extremely defective and the leadership of a chosen few must be substituted for it. The membership of the Senate was not changed very much although provision was made for the inclusion of some of the leaders of Fascism. The new electoral law was promulgated on March 17, and later adopted by both Houses of the legislature.

Besides the cabinet change noted above under *Government*, it should be mentioned that Count Volpi resigned as Minister of Finance and Pietro Fedele as Minister of Public Instruction. Count Volpi was succeeded by Senator Antonio Mosconi and Signor Fedele by Giuseppe Belluzzo, Minister of National Economy. Signor Belluzzo, in turn, was succeeded by Alessandro Martelli. Although no reason was allowed to filter through the press censor, it was felt in many quarters that these cabinet changes resulted from either fundamental disagreement with the Duce or from his desire to place younger men in office.

The final step in making the Grand Council of the Fascist party "the Government" of Italy occurred in the fall. On September 20, the Council approved a measure incorporating itself in the National Government. Summed up very briefly the work of the council under this law was to select the candidates for the Chamber of Deputies as mentioned above, provide for the successor to Mussolini, and nominate all the members of the Government at home and abroad. It thus acts as a unifying force in all the branches of government and remains the head of the Fascist party at the same time. The Grand Council was to hold a position placing it above the ordinary control of the State and was to hold secret meetings.

The bill was passed by the Senate on November 15 and by the Chamber of Deputies on December 8. This was the last act of the Chamber of Deputies, which had been elected in 1924 on the basis of universal suffrage. The next chamber, to be elected early in 1929, was to be selected in

accordance with the new electoral law described above. Thus did Mussolini and the Grand Council, which, after all, was his tool, fasten the grip of Fascism tighter around the economic and social life of Italy. One evidence of the strength of this grip was the reports current throughout the year that the Mafia and Vanditti societies of Sicily and Sardinia had been completely wiped out during the year. Whether this was actually true or whether it was only another rumor which had been circulated for several decades, time alone can tell.

IVORY COAST. A French colony, forming a constituent part of the government-general of French West Africa, situated between Liberia and the British Gold Coast. Area, about 121,976 square miles; population, estimated in 1926 at 1,724,545, of whom 1614 were Europeans. Binger-ville is the capital and has a European population of about 94. The principal commercial products are mahogany, palm oil and kernels, cacao, dried and smoked fish, cotton, and rubber. Some gold has been found. In 1926 the imports amounted to 181,580,971 francs and the exports to 213,819,198 francs. The budget of the colony for 1927 was fixed at 43,668,700 francs. The ports of the colony are visited by the vessels of several British, French, and Belgian steamship companies.

JACQUES, zhàks, GEN. BARON ALPHONSE DE DIXMUDE. Belgian soldier, died at Brussels, November 24. He was born at Stavelock, in 1858, and entered the Belgian national military school in 1876. Entering the army, he fought in the Congo in the early nineties, against Arab slave dealers. During the opening battle of the World War, at Liège, 1914, General Jacques commanded the Twelfth Regiment, one of the famous units of the Belgian Army. He was subsequently appointed commander of the Third Division, and after the war was placed in command of the Belgian Army. He accompanied King Albert on his visit to the United States in 1919, returning in 1921 as guest of honor at the American Legion's third annual convention, at Kansas City. General Jacques received seventeen military decorations, including the Grand Cross of the Order of Leopold I.

JAMAICA. A colony of Great Britain, consisting of the island of Jamaica, which is the largest in the British West Indies, and the following dependencies: Turks and Caicos Islands; Cayman Islands; Morant Cays; and Pedro Cays. Area of Jamaica, 4450 square miles; of the dependencies, 224 square miles. Population of Jamaica, according to the census of 1921, 858,118, including 660,420 blacks, 157,223 colored; 14,476 whites; 18,610 East Indians; and 3696 Chinese; estimated population at the end of 1926, 936,927. The movement of population in 1926 was: Births, 35,784; deaths, 19,072; marriages, 3981. Kingston, the capital, had a population of 62,707 at the census of 1921. In 1926 there were 672 public elementary schools, with 122,337 pupils enrolled and an average attendance of 75,063. In 1926-27 the acreage under cultivation was 1,129,046 acres, apportioned as follows: under tillage 288,386; pasture, 840,660; sugar-cane, 52,676; coffee, 21,726; bananas, 89,768; coconuts, 32,730; cocoa, 4407; ground provisions, 54,942; mixed cultivation, 29,559; guinea grass, 92,525; commons, 748,135. The livestock included 139,382 cattle and 5064 sheep. In 1926-27 the imports were valued at £5,635,-

342 and the exports at £4,258,991. Chief among the exports were bananas, sugar, rum, coconuts, coffee, logwood extracts, cocoa, and logwood; among the imports, flour, cotton goods, and fish. Aside from an electric railway in Kingston, the only rail transportation on the island is the Jamaica Government Railway, with a length of 210 miles. Revenue in 1926-27, £2,147,042; expenditure, £2,046,205; public debt, £4,671,640. The Governor in 1928 was Sir R. E. Stubbs who was appointed in 1925 and assumed office April 27, 1926.

JANACEK, LEOS. A Czech composer, died at Mährisch-Ostrau, August 12. He was born at Hukvaldy, Moravia, July 3, 1854, and received his musical education at the Organ School in Prague and at the conservatories of Leipzig and Vienna. After unsuccessful efforts to win reputation as a piano virtuoso, he settled, in 1881, in Brünn as conductor for the Philharmonic Society. In the same year he opened there his private Brünner Orgelschule and in a short time he was recognized as a teacher and choral conductor of exceptional ability. In 1885 he wrote his first opera, *Jarka*, but was unable to secure its performance. Discouraged, he turned to the composition of choral works which immediately found great favor with his countrymen, who proclaimed him the foremost contemporary national composer. For almost twenty years he made no further attempts at opera, until the very effective text of *Jenufa* aroused his interest. However, the première of this work at Brünn, in 1904, passed almost unnoticed and during the next twelve years only sporadic performances on provincial stages can be recorded. But when *Jenufa* was heard at Prague, in 1916, it scored an overwhelming success, so that from then on the composer devoted his energy almost exclusively to the stage. Of the operas that followed in rapid succession, the most successful are *The Adventures of Mr. Broucek* (Prague, 1920), *Fate* (Brünn, 1921), *Katya Kabanovna* (Brünn, 1922), *The Sly Little Women* (Brünn, 1925, awarded the State Prize of the Czechoslovak Republic), and *The Makropoulos Case* (Prague, 1926). Shortly before his death the composer completed his last opera, *The House of the Dead*, which had not been produced up to 1928. Through the influence of Jeritzka, *Jenufa* was produced at the Metropolitan Opera House (Dec. 6, 1924), but disappeared from the repertory after a few repetitions. The reason Janacek's operas have not gained a foothold outside of Czechoslovakia is to be found in the fact that the librettos deal almost exclusively with local peasant life, and the music is not sufficiently great to overcome this handicap.

JAN MAYEN. An isolated island in the Greenland Sea, 70° N., 8°30' W., which since 1920 has been occupied by the Norwegian Geophysical Institute. Its staff sends daily to Norway by radio a detailed weather report, supplemented during the fishing seasons by a similar report from the Norwegian station of Mygbutken, on the east coast of Greenland. These reports are useful in forecasting the violent storms on the coast of Norway.

JAPAN. A Far Eastern empire, consisting of the five main islands of Honshiu (mainland), Shikoku, Kinshu, Hokkaido (Yezo), and Formosa or Taiwan; also a number of smaller islands and island groups (approximately 4000 islands), and the peninsula of Korea or Chosen, and Karafuto,

i.e. the southern half of the island of Sakhalin. Capital, Tokyo.

AREA AND POPULATION. The total area of the Japanese Empire is given at 260,707 square miles, made up chiefly as follows; Honshiu, 86,775; Korea, 85,228; Hokkaido, 30,275; Kiushiu, 15,588; Formosa, 13,840; Karafuto, 13,934; Shikoku, 7031; Kurile or Chisima Islands, 6024. In 1920 the total population of the Japanese Empire according to the census of that year was 76,988,379, distributed chiefly as follows: Honshiu (Japan proper), 55,963,053; Korea, 17,264,119; Formosa, 3,655,308; Karafuto, 105,899. The population of Japan proper, according to the census of 1925, was placed at 59,736,822. The movement of population in 1926 was: Births, 2,104,405; deaths, 1,160,734; marriages, 502,847; divorces, 50,119. The population of the principal cities at the census of 1925 was: Tokyo, 1,995,303; Osaka, 2,114,809; Kobe, 644,212; Kyoto, 679,976; Nagoya, 768,560; Yokohama, the port of Tokyo, 405,888; Nagasaki, 189,071; and Hiroshima, 195,731. On Apr. 1, 1927, nine towns and villages adjacent to Yokohama, containing a total population of 112,204, were incorporated in the city of Yokohama, thus making the population of that city 518,092. Among the towns included were two of considerable importance—Tsurumi, with a population of 53,135, and Hodegaya, with 28,570.

EDUCATION. An elementary school course of six years is compulsory between the ages of 6 and 14. In 1924-25 there were 9,188,355 attending elementary schools, 559,882 secondary schools, 1,025,544 preparatory technical schools, 48,492 special schools, 41,436 normal schools, 213,638 technical schools, and 42,692 universities. There were 242,812 in schools of miscellaneous grades. Japan has five Imperial universities and 26 other institutions of university rank.

CROPS: AREA AND PRODUCTION, 1926-1927

Crop	Area (thousands of acres)		Production (thousands of units—bushels except as indicated)	
	1926	1927	1926	1927
Wheat	1,146	1,159	28,430	29,248
Barley	2,431	2,343	88,078	71,559
Oats	269	...	10,764	...
Rice	7,740	7,777	492,505	550,175
Tea	109	106	79,862 ^a	81,479 ^a
Tobacco	91	91	132,278 ^a	147,986 ^a

^a Unit, pound.

PRODUCTION, ETC. In 1926 there were in Japan, out of a total area of 94,289,000 acres, 7,269,000 acres of rice fields, 6,765,000 acres of upland farms, 4,099,000 acres of moors and pastures, and 20,980,000 acres of forests. Agricultural conditions were more favorable in 1927 than in the previous year. The rice crop, by far the most important, was officially estimated at 317,952,000 bushels of brown rice (550,175,000 bushels of rough rice), an increase of 11.7 per cent compared with 1926, and the largest crop since 1920. Under normal conditions large crops in Japan tend to increase the purchasing power of the landlords and farmers who constitute approximately one-half of the total population. Returns from agriculture in 1927 were greatly reduced, however, as farmers had difficulty in financing their crops because of a bank crisis and were forced to sell at low prices. The price of rice fell to the lowest point recorded during the past few years, and in an effort to relieve the situation, the Gov-

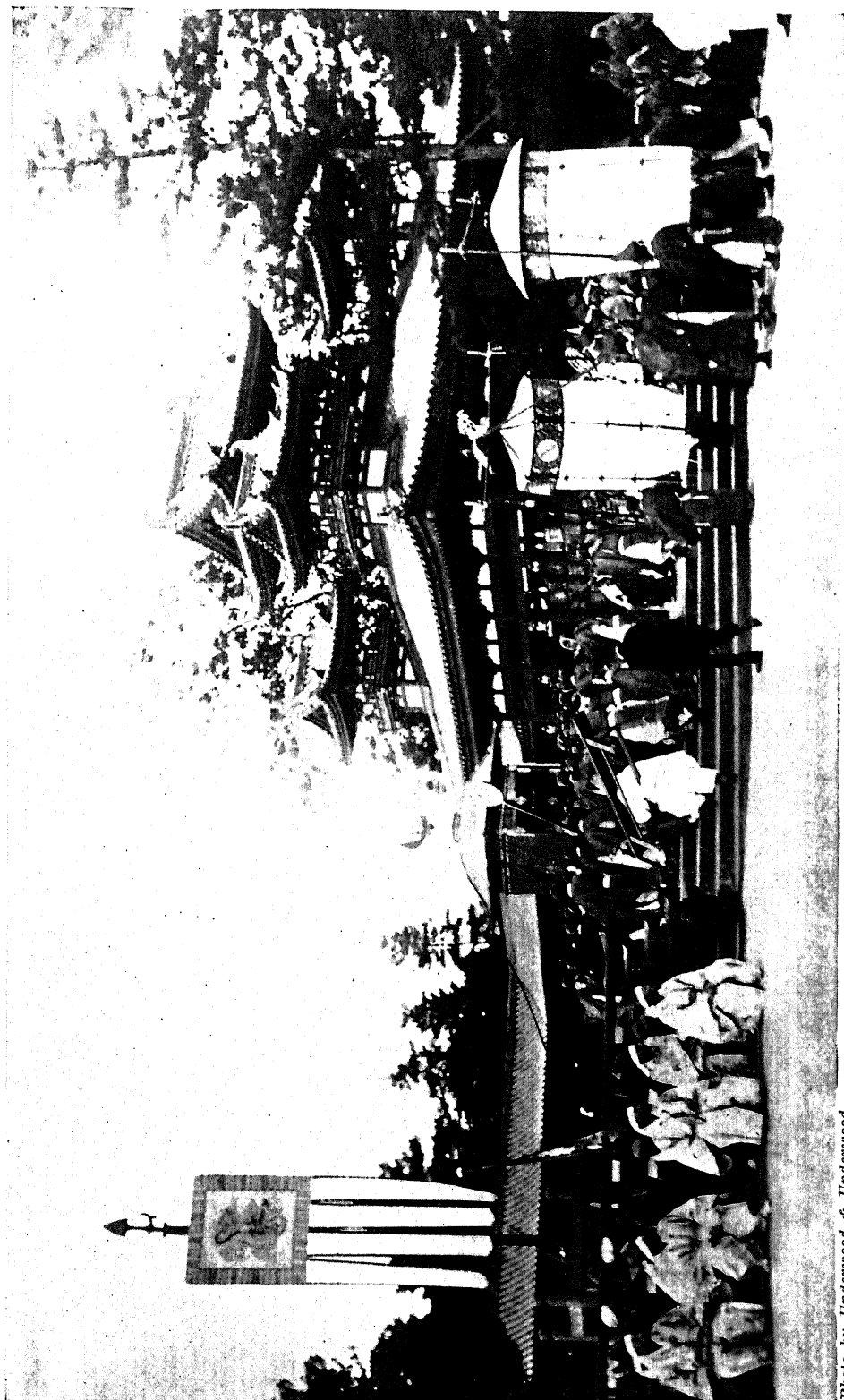


Photo by Underwood & Underwood

JAPAN—THE CORONATION FESTIVITIES
THE "JIDAI-MATSURI" PROCESSION ARRIVING AT HEIANJUNGU SHRINE

JEW'S

ernment purchased 5,120,000 bushels of the 1927 crop.

The production of silk cocoons in 1927 was 753, 309,000 pounds, an increase of 5 per cent over 1926. The value of cocoons declined about 24.1 per cent because of the financial situation and the fall in the market price of raw silk. On Dec. 31, 1926, there were in Japan 1,465,000 cattle, 621,000 swine, 18,000 sheep, 179,000 goats, and 1,444,000 horses.

While deposits of gold and silver had been known to the Japanese and worked by them for centuries, the only mineral substances of material importance at the present time are coal and copper. The production of gold in 1927 was 299,569 troy ounces; silver, 4,344,000 troy ounces; copper (1926), 67,365 metric tons; and coal, 31,200,000 metric tons. The principal industries of the country are silk, cotton, iron and steel, dyes and chemicals, and shipbuilding.

JAPAN'S TRADE IN PRINCIPAL COMMODITIES, 1926-1927 [In thousands of dollars—000 omitted]

Item	1926	1927
EXPORTS		
Raw silk	\$345,005	\$352,675
Cotton textiles	195,640	182,822
Silk textiles	62,543	66,317
Cotton yarn	33,237	13,427
Fish and shellfish	15,217	16,478
Potteries	15,596	14,488
Knitted goods	12,224	13,802
Sugar, refined	15,995	13,736
Coal	14,585	12,116
Paper	8,980	9,150
Glass and glass manufactures	6,725	7,890
Lumber	8,450	7,552
Wheat flour	9,283	6,773
Iron manufactures	6,107	5,728
Waste and floss silk	7,663	5,619
Tea	5,693	5,176
Machinery	4,101	5,379
Beans and peas	5,143	4,972
All other	188,885	197,756
Total	961,022	946,351
IMPORTS		
Raw cotton	\$341,187	\$296,670
Iron and steel	57,794	55,347
Lumber	48,892	49,292
Wool	40,431	43,296
Oil cake	58,343	47,015
Rice and paddy	23,826	37,481
Machinery	42,521	37,341
Sugar, crude	39,326	36,007
Wheat	43,873	25,616
Beans and peas	28,854	25,132
Woolen yarns	15,267	20,687
Wool textiles	13,735	16,464
Cotton textiles	2,955	3,438
Mineral oil	14,175	20,094
Coal	12,954	16,857
Automobiles and parts	7,389	8,684
Paper	9,396	7,256
Tobacco leaf	3,775	4,496
All other	312,720	278,925
Total	1,117,418	1,035,098

COMMERCE. Japan's total foreign trade in 1927 amounted to \$1,981,448,735, or \$96,991,086 less than the 1926 figure. Exports during 1927 aggregated \$946,350,653, against \$961,022,109 in 1926, while imports were valued at \$1,035,098,082, against \$1,117,417,712 in 1926—thus developing a decrease of 7.4 per cent in imports and 1.5 per cent in exports as compared with the previous year. Taking into consideration, however, the financial crisis of 1927, which led to a reduction in the purchasing power of the nation, and the disturbed conditions in China, which adversely affected Japan's exports, the decrease in trade was surprisingly slight. The adverse import bal-

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ance was reduced from \$156,395,603 in 1926 to \$88,747,429 in 1927. A compilation of Japan's total export and import trade in principal commodities for the years 1926 and 1927 is given in the preceding table.

Trade of the United States with Japan during 1927 was 1.1 per cent lower than the 1926 figure. Exports to the United States decreased 2.1 per cent, while American imports increased 0.1 per cent. However, compared with 1913, Japanese exports to the United States have quadrupled and imports from the United States have quintupled in value. Japan's exports to the United States during 1927 amounted to \$396,057,022 against \$404,613,872 in 1926, and imports from the United States were valued at \$320,000,805 as compared with \$319,687,308 in 1926.

JAPAN'S TRADE WITH THE UNITED STATES, BY COMMODITIES, 1926-1927 [In thousands of dollars—000 omitted]

Item	1926	1927
EXPORTS		
Raw silk	\$333,408	\$331,970
Silk textiles	12,343	8,640
Waste silk and floss silk	3,497	2,624
Potteries	6,555	5,816
Tea	4,742	4,104
Toys	1,797	1,623
Glass manufactures	477	1,169
Paper	402	494
Cotton textiles	282	204
Chemicals	4,185	2,261
All other	36,926	37,152
Total	404,614	396,057
IMPORTS		
Raw cotton	\$149,191	\$163,193
Lumber	39,813	33,862
Iron, bars, rods, etc.	14,341	15,110
Machinery	19,775	14,778
Wheat	11,888	8,724
Automobiles and parts	6,159	7,611
Fertilizers (ammonium sulphate and phosphorite)	5,700	4,109
Rice	1,170	4,120
Paper	890	596
Iron—pig, ingots, etc.	7	43
All other	70,750	67,855
Total	319,687	320,001

GOVERNMENT RECEIPTS AND EXPENDITURES [Thousands of Yen]

	1927-28, estimated
Ordinary receipts	1,458,151
Income tax	224,160
Land and business tax	117,906
Customs	127,413
Liquors, sugar, and textiles	348,954
Stamp receipts	81,469
All other taxes	64,824
Posts, telegraphs, and telephones (gross)	240,549
Monopolies (net)	160,508
Other public enterprises	62,725
All other	29,646
Extraordinary receipts	300,818
Ordinary expenditures	1,184,526
Debt service	290,336
Army and navy	309,592
Public instruction	119,218
Communications (gross)	279,579
All other	185,801
Extraordinary expenditures	574,444
Equivalent (\$1000) at par:	
Ordinary receipts	726,888
Ordinary expenditures	590,486
Extraordinary receipts	149,958
Extraordinary expenditures	286,360

FINANCE. In the absence of a budget law the 1927-28 budget, providing for a total expenditure of 1,730,000,000 yen, was to be in force for the fiscal year 1928-29, with a supplementary budget of 16,000,000 yen to cover the expenses of the Emperor's coronation. Japan's national debt in-

creased about 4 per cent during 1927, entirely in internal debt. The total debt on Dec. 31, 1927, was 5,362,011,000 yen (equivalent at par to \$2,672,962,000).

The table on page 373, from the *Commerce Year Book* for 1928, gives the items of the 1927-28 budget, which were to be carried over into 1928-29.

COMMUNICATIONS. In 1927 the Japanese merchant marine comprised 2035 vessels of 4,033,304 gross tons. In the same year 17,025 vessels of 49,312,000 net registered tons entered the ports of Japan and 17,031 vessels of 49,811,000 tons cleared.

At the close of the year ended Mar. 31, 1927, the Imperial Government Railways of Japan owned 8008 miles of main line, branches, and sidings, an increase of 171 miles over the preceding year. Operating revenue amounted to 475,325,287 yen; other revenue, 11,700,130 yen; operating expenses, 276,674,159 yen. The equipment in operation at the close of the year comprised 3965 locomotives, 10,058 passenger cars, and 61,897 freight cars. During the year the following new equipment was purchased from foreign countries: 135 steam locomotives, 12 electric locomotives, 583 passenger cars, 89 tram cars, and 2498 freight cars. The State Railways bought from private lines, two steam locomotives, three passenger cars, and 13 freight cars. It was reported that 667 freight cars were rebuilt during the year. The equipment of rolling stock with air brakes was furthered during the year, there being at the end of March, 1927, 2399 locomotives, 762 passenger cars, and 60,267 freight cars equipped with air brakes.

During the year the railway board spent some 12,016,119 yen for electrical equipment such as improving electric car lines, installing steam electric generators, and building electric substations. A total of 10,850,000 yen was appropriated also for the construction of an electric power station at Tsurumi.

There were 230 privately owned railways in Japan with a total mileage of 2917. These railways are classified as follows: Steam, 1317 miles; electric, 1497 miles; steam and electric, 73 miles; gasoline, 30 miles. Operating revenues for the year amounted to 68,676,905 yen, of which amount passenger revenue was 44,304,082, and freight revenue 20,720,015 yen. Other revenue amounted to 3,652,808 yen. Operating expenses reached 37,715,019 yen, and other expenses totaled 13,531,107 yen. Private railways formed during the year totaled 31, and 166 miles of railways were built.

	Completed at end of		
	1925	1926	1927
Battleships and Battle Cruisers ..	10	10	10
Armored Cruisers	7	7	7
Aircraft Carriers	1	1	2
Cruisers	21	23	25
First-class Gunboats	4	4	4
Destroyers	88	98	97*
Submarines	53	58	65*

* The destroyers are 44 first class, 51 second class, 2 third class.

† The submarines are 10 first class, 45 second class, 10 third class.

ARMY AND NAVY. Military service is universal and compulsory. Liability commences at 17, but actual service begins at 20 years and lasts for 20 more. The peace strength of the active army in 1927 was 220,840 of all ranks. The military

budget for 1927-28 amounted to 173,614,412 yen. See **MILITARY PROGRESS.**

The accompanying table from the *Statesman's Year Book* for 1928 shows the classification of the Japanese fleet for the three years ending with 1927. See **NAVAL PROGRESS** for further statistics and information.

GOVERNMENT. Executive power is in the Emperor who acts with the advice and aid of a ministry appointed by and responsible to himself; legislative power is in the Emperor and the Imperial Diet of two chambers, namely, the Upper House or House of Peers, composed of membership based on rank, wealth, and other qualifications, and numbering 407 members at the beginning of the year; and the Lower House or House of Representatives, elected for four years, unless sooner dissolved, and numbering 466 members after the election of February, 1928. Emperor in 1928, Hirohito, born April 29, 1901; succeeded his father, Yoshihito, Dec. 25, 1926. The cabinet at the beginning of the year was composed as follows: Prime Minister and Foreign Affairs, Baron Tanaka; Home Affairs, Kisaburo Suzuki; Finance, Chuzo Mitsuuchi; War, General Shirakawa; Marine, Admiral Okada; Justice, Yoshinori Hara; Education, Rentaro Mizuno; Agriculture and Forestry, Teijiro Yamamoto; Commerce and Industry, Tokugoro Nakahashi; Communications, Keisuke Mochizuki; Railways, Heikichi Ogawa.

HISTORY

As noted in the previous **YEAR BOOK**, the political situation in Japan was considerably complicated at the close of 1927. The cabinet was in the rather uncomfortable position of not having a majority in the House of Representatives. Baron Tanaka, the Prime Minister, decided on a bold stroke, that of dissolving the legislature and calling a general election before the opposition could censure it or bring before the public its shortcomings. The Diet met on January 21 and was immediately dissolved, a general election, the first under the Manhood Suffrage Act of 1925, being called for February 20. The Government party (Baron Tanaka's) went before the public on a platform of government aid to industry and finance and a strong hand in China.

As a result of the election, the Government party, the Seiyukai, increased its membership from 159 to 221, a gain of 32 seats. The leading opposition party, the Minseito, only returned 214 of the 223 constituencies it held before the election. The Independents elected 16 members, Labor, 8, the Business Men's party, 4, and the Shinsei Club, 3. This result was almost a foregone conclusion because a government party in Japan rarely loses an election. The opposition claimed that some of the members claimed by the Government party were really independents. Although the Seiyukai did not have an absolute majority in the new House of Representatives it could depend upon a sufficient number of the minority groups to give it a working control over the chamber. The election was carried out with unusual quietness, although there was considerable enthusiasm. More than four-fifths of the registered voters came to the polls, which was highly significant in light of the absence of real issues between the two leading parties. The hopes of the opposition that the universal suffrage rule in vogue would strengthen their cause was not fulfilled, and if one is to interpret the election the conclusion must be reached that a majority

of the new voters, although not from the propertied classes, were conservative in politics and did not desire a change in government. It was also felt that the success of the Government party was slight enough to compel it to take a more cautious attitude, particularly in connection with China. For a discussion of the relations between China and Japan during the year consult the article on CHINA, *History*.

A change was made during the year in the Japanese representative at Washington. Mr. T. Matsudaira, the Ambassador to Washington, was transferred to Great Britain and was succeeded by Katsuki Debuchi, the Vice Minister of Foreign Affairs.

On November 10, all of Japan was thrilled by the ascension to the throne of Emperor Hirohito after a series of traditional ceremonies lasting three weeks. On December 20, the largest budget in the history of the country was announced for the fiscal year 1929-30, 1,753,000,000 yen (\$806,380,000). It represented an increase of 43,700,000 yen over the 1928-29 budget, and it was stated in some parts of the Japanese press that the increase was much smaller than the Government desired, but it feared that a larger increase would jeopardize its rather weak position in the House of Representatives.

For Japanese literature, see PHILOLOGY, MODERN.

JAPANESE BEETLE. See ENTOMOLOGY, ECONOMIC.

JEBEL SHAMMAR. See ARABIA.

JEFFERSON, THOMAS, CENTENNIAL. See CELEBRATIONS.

JÉHIN, LÉON-NOËL-JOSEPH. A French orchestral conductor, died at Monte Carlo, in February. He was born in Spa, Belgium, July 17, 1853. After graduation from the Brussels Conservatory, where he was a pupil of Léonard, he began his career as conductor in Brussels. From 1879 to 1889 he taught theory at the conservatory. Then he became principal conductor at Monte Carlo, which post he filled with distinction until his death. Under his direction of the private opera of the Prince of Monaco, Monte Carlo became the most important operatic centre of France next to Paris. Jéhin was entrusted with the world première of several works by Massenet, Bruneau, Leroux, and Messager.

JENNINGS, SIDNEY JOHNSTON. American mining engineer, died at New York, November 17. Born at Hawesville, Ky., Aug. 13, 1863, he attended schools in Tours, France, and in Germany, and was graduated from the Lawrence Scientific School of Harvard in 1885. He continued his studies at the University of California, while surveying for the New Alameda Quicksilver Mining Company, 1885-87. He was next employed by the Anaconda Copper Company, of Butte, Mont., 1887-89. During the following eighteen years, Mr. Jennings was associated with mining concerns in the Rand, first going to South Africa in 1889 as manager of the Willow Copper Company. He became assistant general manager of the De Beers Consolidated Mines at Kimberley two years later. Having transferred to the Crown Deep Mine, Ltd., in 1893, he remained in Johannesburg as manager of the Crown Mines, 1896-1907, also serving as consulting engineer of H. Eckstein & Company. After the British occupied Johannesburg, May 29, 1900, Mr. Jennings was placed on the town council and chosen as the head of the works committee. Under his super-

vision, electric trolley lines and water supply and sewerage systems were installed. Returning to the United States, Mr. Jennings became vice president of the U. S. Smelting Refining & Mining Company in 1908, a position which he held until his death. He was also director of the Cia de Real del Monte y Pachuca, and president of the Hanover Bessemer Iron & Copper Company. Among other scientific societies of America, Great Britain, and Africa, he belonged to the American Institute of Mining Engineers and served as its president, 1918-19. He was also president of the American Mining Congress, 1922-23.

JERUSALEM. See ARCHAEOLOGY.

JEWS. STATISTICS FOR THE UNITED STATES. In a significant article by Dr. H. S. Linfield in the *American Jewish Year Book* (1928), there is disproved apparently a long-established misconception, namely, that the Jews of the United States are to be found in the large urban centres only. As a result of a nation-wide survey in which his inquiries penetrated into every community in the country, Dr. Linfield found that Jews were living not only in every city having a population of 25,000 and over, but that Jewish families were to be found in 80 per cent of the cities between 2500 and 25,000 population, in 30 per cent of incorporated villages of less than 2500 population and in 7 per cent of rural unincorporated areas. There was a total of 6420 communities and 3292 unincorporated places in the country where Jewish families had settled.

Another factor threw light on Jewish mobility in the last few years. In 1917 there were 1900 Jewish congregations in the United States; by 1927 the number had increased to 3000 of which 93 had been established in rural places. The new census showed that there were 4,228,029 Jews in the country or 3.58 per cent of the total population. The cities continued to hold the great majority of the Jewish population. At least 190 cities had 1000 or more Jews. New York City had 1,765,000 (29.56 per cent of that city's population), Chicago had 325,000 (10.47 per cent of the city's population), Philadelphia had 270,000 (13.26 per cent), Boston had 90,000 (11.35 per cent), Cleveland had 85,000 (8.63 per cent), Detroit had 75,000 (5.62 per cent), Baltimore had 68,000 (8.3 per cent), Los Angeles had 65,000 (5 per cent), Newark had 65,000 (13.93 per cent). Smaller cities had large Jewish densities. Of Atlantic City's population, 22.56 per cent was Jewish; 13.26 per cent of Bayonne's population was Jewish; 40.92 per cent of Chelsea's (Mass.) population was Jewish; 16 per cent of Hartford's population was Jewish; 15.5 per cent of Paterson's (N. J.) population was Jewish. Dr. Linfield showed the concentration in the cities, and at the same time the dispersal of the Jews, in this way:

68 cities of	100,000 or over	had	3,553,600 Jews
219 cities of	100,000-25,000	had	378,862 Jews
461 cities of	25,000-10,000	had	111,742 Jews
721 cities of	10,000-5,000	had	41,855 Jews
1,321 cities of	5,000-2,500	had	32,370 Jews
12,908 places of	2,500 or less	had	43,513 Jews
Rural unincorporated territories		had	66,087 Jews

There were interesting distributions by political divisions. In the northern part of the United States (New England, Middle Atlantic, Maryland, Delaware, District of Columbia, East North Central, and the West North Central States) were to be found 90.4 per cent of the country's

Jewish population. In the South (made up of the South Atlantic States, East South Central and the West South Central States) were to be found only 5.35 per cent of the country's Jews; while the Jews of the West (made up of the Mountain and the Pacific States) comprised 4.26 per cent of the total.

Dr. Linfield's canvass of Jewish congregations in the United States (made for the U. S. Census Bureau) showed a preliminary total of 2948 permanent congregations of which 2855 were located in urban areas (2500 inhabitants or over) and 93 were in rural places. The average number of persons served by a congregation was 1386 Jewish persons (1426 persons in urban areas and 166 persons in rural places). Of these congregations, 1131 reported the value of their buildings as being \$100,891,669. A total of 1335 congregations reported an annual expenditure of \$16,445,235.

IMMIGRATION. For the year ending June 30, 1927, 11,482 Jews (3.4 per cent of the total) were admitted into the United States. The following were the reported destinations of these Jewish immigrants: California, 214; Connecticut, 155; Illinois, 762; Maryland, 101; Massachusetts, 385; Michigan, 470; New Jersey, 524; New York, 7068; Ohio, 269; Pennsylvania, 787; other States, 747. During 1927, 4471 Jews entered Canada via ocean ports (this does not include immigrants from the United States). During 1926, 7534 Jews entered the Argentine; during 1927, 2713 Jews entered Palestine and 5071 Jews departed from that country.

JEWS IN OTHER COUNTRIES. It was estimated by the *American Jewish Year Book* that there were 15,324,515 Jewish persons in the world. (See 1927 YEAR BOOK for table.) The following were the more important Jewish populations: Austria, 350,000; Canada, 126,196; British Empire, 514,442; Czechoslovakia, 354,342; France, 200,000; Germany, 564,379; Great Britain, 279,000; Hungary, 473,310; Lithuania, 155,125; Palestine, 157,800; Poland, 2,854,000; Rumania, 900,000; Russia (U.S.S.R.), 2,820,429; United States, 4,228,020.

EVENTS OF THE YEAR. Important communal activities that may be noted were: the interesting census taken by the American Jewish Committee (above noted) which indicated a dispersion of Jews over the country; the survey of New York conducted by the Bureau of Jewish Social Research, which showed the breakup of the old ghetto districts and the removal of Jews into new middle-class areas; the granting of a charter to the Yeshiva College of America for conducting the first Jewish denominational college in the country; the passing of the *Jewish Daily News*, the first Yiddish daily in the United States; the closing down of the Jewish Art Theatre and the closer approximation of the Yiddish stage of New York to Broadway models; the disappearance of the Order B'rith Abraham, one of the oldest Jewish fraternal orders. Observers were agreeing that the old Jewish life, with its physical separatism, was breaking up. Whether it was to be replaced by a unity of the spirit remained yet to be seen. That there were already some evidences of this reorientation could be observed in the recent extraordinary developments in Jewish education and synagogue-centre building.

American Jewry continued to pay attention to the status of the Jews in Russia and Rumania. During the year the Joint Distribution Commit-

tee announced that it had collected \$21,000,000 for the carrying out of its rehabilitation programme in Eastern Europe. In March it was reported that Julius Rosenwald had contributed \$5,000,000 toward a ten-million-dollar fund for the purpose of continuing the Jewish colonization work in Russia. This fund was to augment a similar grant to be made by the Soviet Government. Continued ill-treatment of Rumanian Jews aroused the resentment of their American kinsmen and led to further official assurances from the Rumanian Government. The American Jewish Congress was particularly outspoken in its hostility toward the Rumanian Government.

The United Palestine Appeal reported that it had collected for Zionist work from Oct. 1, 1927, to July 15, 1928, a total of \$4,537,514 of which sum it had sent to Palestine at that date \$2,431,522.

FOREIGN. In Germany, minor disturbances centering particularly in the desecration of Jewish cemeteries, were dealt with energetically by the police. In other countries in Western Europe Jewish communal life was peaceful.

In Hungary, Jewish life continued unhappy. The long-promised abolition of *numerus clausus*, as it passed the Hungarian Parliament in February, was obviously a subterfuge. For the *numerus clausus* there was set up a series of preferences. First to be admitted to the universities were to be children of government officials, then were to follow children of war veterans and army officers, then were to come children of peasants, then were to come children of persons engaged in industry, finally were to be admitted the children of merchants. The deceit may be seen when it is understood that most of the Jews of the country are engaged in trade and the system of preferences was calculated to be quite as effective as the old *numerus clausus*. In this fashion Hungary was prepared to report to the League of Nations the abolition of the *numerus clausus*.

Anti-Semitic riots among the students of the universities of Budapest, Debreczin, Pech, and other large towns were reported late in October. The outrages were due to the fact that the students were suspecting the Government of admitting larger numbers of Jewish students into the universities than the law allowed. The Government closed four colleges as a result of the disorders and made 140 arrests. The troubles led to a stormy debate in the Hungarian Parliament and resulted in the charge being passed by a Jewish deputy that the under-Secretary of the Department of the Interior had secretly encouraged the rioting.

Jewish life in Rumania appeared quite as insecure as ever. Toward the end of 1927 a congress of students, held at Oradeamare, got out of hand and attacked and desecrated Jewish synagogues. Lesser outbreaks occurred along the routes home of the students. The Government, upon being taxed with its neglect, promised to rebuild synagogues at public expense and punish the guilty students. The University of Bucharest promised to expel all students who had participated in the outrages. Later advices told that a number of the participants had been imprisoned for short terms, while 380 students had been suspended from their universities for a year. A number of police officers were cashiered. The overthrow of the Averescu government, at the end of the year, had been followed by a series of edicts opening the Jewish schools and excus-

ing the Jewish children from writing at the public schools on Saturday.

From a variety of sources, during the year, reports came to deny the official disclaimers that the Jews of Rumania were being persecuted. The American Committee on the Rights of Religious Minorities (made up of non-Jews), printing the results of its investigation in May, found anti-Semitism everywhere fomented by societies which the Government made no attempt to check. For example this was the programme of the National Rumanian Christian Students Union, headed by the notorious Prof. A. C. Cuza: "Drive every Jew out of Greater Rumania. Refuse to employ any Jew for any kind of work. Do not permit any Jew to attend any class in any school within Rumania. Do not buy from any Jew. Do not sell to any Jew. Do not allow any Jew to vote or take part in any election. Keep the Jews out of all positions of honor, emolument, or service to the State."

In Poland events appeared on the mend. The Jewish bloc seemed to have disappeared and Jews appeared to be accepting Polish party loyalties. The result was the return of but half the number of Jewish deputies to the Sejm. But the number of Jewish representatives on municipal assemblies was reported to be increasing. Late in 1927 in the country's municipal elections, 540 Jewish councilors were elected out of a total of 1597. The Government took a vigorous stand against the *numerus clausus* and even went so far as to establish a Jewish chair at the University of Warsaw to train teachers in religious instruction at the state high schools. Early in the year the Jewish schools of Warsaw were placed on the same footing as the public schools with increases in their allotments. Thus political liberty appeared nearer. But observers united in declaring that the economic status of the Polish Jew was just as wretched as ever. The threat of government monopoly of characteristic industries appeared as real as ever. Steps were being taken to limit the number of Jewish artisans by providing for an apprenticeship and attendance in trade schools where only Polish was the language of instruction.

In four years, 1924-28, the Soviet Government had settled 35,000 Jewish families on 800,000 acres of land. It was reported that in the spring the Soviet Government had started a new colony for Jewish agriculturists in Siberia. It was also reported that anti-Semitism appeared on the increase in Russia and the governmental organs as well as official agencies were making serious efforts to combat it.

REPORT OF THE JOINT PALESTINE SURVEY COMMISSION. The preceding YEAR BOOK spoke of the truce that had been effected between Zionists and anti-Zionists and of the creation of the Jewish Agency in Palestine, together with the setting up of the Joint Palestine Survey Commission for the purpose of formulating a common programme of action. The report of the commission, based on the study of its experts, was submitted early in the summer. There follow the more important recommendations contained therein: a more careful regulation of the immigration into the country, particular attention being paid to the needs of the industries; the Palestine Government to be urged to hasten the settlement of more Jewish farmers on the land; the afforestation of more waste lands; the Government must know that the only equitable form of taxation must be based

not on the yield of the land but on the unimproved value of the property to be taxed; the Government can encourage agriculture by exempting from taxation for five years all new farming enterprises; before settlers are placed on the land their holdings should be adequately prepared for them, i.e. drained, irrigated where necessary, roads constructed, etc., etc.; settlers ought to become the owners of their lands though most of the land now being tilled is under leasehold from the Jewish National Fund; coöperative purchase and marketing should be encouraged; the creation of a Board for agriculture upon which is to be represented the Government, the Jewish Agency, the Hebrew University, and the Pica; industry should be encouraged; certain local industries might well be protected by customs' duties; freight rates should be reduced and a special rate on goods for export should be established; the establishment of agencies for the encouragement of manufacturers to locate in Palestine; the Government should support education and should aid all non-government schools when they come up to certain minimum standards; the Government should assume a larger responsibility in matters relating to the public health; grants-in-aid should be extended to private hospitals based upon number of free hospital days; labor must accept the principle that industry and agriculture can be encouraged only by the offering of a suitable return for the capital and labor invested; setting up of arbitration machinery for the handling of trade disputes; coöperative organizations of producers and consumers should be encouraged; a minimum annual budget needed for Palestine is £1,000,000, this to be provided by Zionist effort. Under this budget "for the present no new enterprises can be undertaken."

The commissioners felt very strongly that a policy which did not allow of further development and the acquisition of new territory, the founding of new colonies, and the initiation of broader schemes of great importance to the economic life of the country, must be considered entirely unsatisfactory. The commission called upon the Jewry of the world for raising the sum needed annually for the redemption of the Jewish National Home. The report was signed by Lord Melchett of England, Oscar Wasserman of Berlin, and Lee K. Frankel and Felix M. Warburg of the United States.

ZIONISM. There were two outstanding events in the history of Zionism during the year: the struggle that took place at the annual American convention in June to oust the leadership of Mr. Lipsky and the peace that was made between Zionists and non-Zionists for the support of the Jewish Agency, that was reached in October. The storm against Mr. Lipsky's administration was long brewing. The leading charges against the conduct of the Zionist Organization of America centred in the wasteful management of funds that led up to the collapse of the American Zion Commonwealth. So threatening did the controversy become that a group of New York judges, called in to sit as arbitrators, found that the present administration was fast losing the confidence of American Jewry and that it would be the counsel of wisdom to elect a new administration at the annual convention in July. On the eve of the convention Mr. Lipsky threw his followers into a panic by announcing that he would not seek reëlection.

The convention, that assembled in Pittsburgh on July 1, therefore, at once became the scene of a great test of strength. The opposition, led by Mr. Abraham Tulin of New York (though actually Judge Julian Mack was its inspirer), proved at once more noisy than large. The majority on the second day passed a vote of confidence in the administration and thus early paved the way to the reelection of Mr. Lipsky. He, however, held out against his reelection until the story was spread that his personal honesty had been impugned by members of the opposition. His supporters, at this turn of affairs, felt that nothing would satisfy them but complete vindication with the result that Mr. Lipsky was put in nomination and reelected once more. An important change in the constitution of the organization was also effected for the purpose of relieving the president of the burden of his administrative duties. This was accomplished through the creation of administrative and executive committees and the setting up of a governing council of nine persons to be recruited from the administrative committee, each of whose members was to head a separate department. The business of the organization was to be in the hands of an executive director.

In October non-Zionists, under the leadership of Louis Marshall, pledged their support toward the upbuilding of the Jewish National Home. Reference was made above to the report that was submitted by the joint commission for the creation of the Jewish Agency. Preliminary to the New York meeting in October, the report of this commission was taken up at Berlin by the Inner Actions Committee of the World Zionist Organization and adopted almost unanimously. The way was thus clear for the creation of the Jewish Agency which was to be the official representative of world Jewry in the Government of Palestine. This great task was finally consummated in the conferences held October 20 and 21. Here a group of persons representing the Zionists and non-Zionists of the United States voted unanimously to adopt the report of the Palestine Commission and the leaders of both groups publicly congratulated each other for the peace that had finally been effected. By the convention it was agreed that the Jewish Agency was to consist of 50 per cent Zionists and 50 per cent non-Zionists and that the latter was to be made up two-fifths of Americans. The Zionists on the Agency were to be chosen by the Zionist World Organization. A committee of seven members was named to choose the American non-Zionist representatives in the Jewish Agency.

JODAK. See GUMPPENBERG, HANNS, FREIHERR VON.

JOHNS HOPKINS UNIVERSITY. A non-sectarian institution of higher education for men (women are admitted to certain courses), at Baltimore, Md., founded in 1876. The enrollment for the autumn of 1928 was 5575, distributed as follows: School of higher studies, 508; school of medicine, 282; school of hygiene and public health, 91; college of arts and sciences, 331; institute for biological research, 1; school of engineering, 287; school of business economics, 66; college for teachers, 1397; night courses for technical workers, 450; evening courses in business economics, 1055. The registration for the 1928 summer session was 1107. The faculty numbered 575. The productive funds amounted to

\$24,947,011, and the income for 1927-28, from all sources, to \$2,110,221. The library contained 300,000 volumes. The Welch Medical Library of Johns Hopkins, named for Dr. William H. Welch, was opened in the autumn, to house the libraries of the school of medicine, the hospital, and the school of hygiene and public health. Lieut.-Col. Fielding H. Garrison, head of the Army Medical Corps Library in Washington, was appointed as consulting librarian and William G. Shules, as assistant librarian. The Institute for the Study of Law, established in June, 1928, completed a programme of expansion formulated in 1910. The institute is an independent school of the university and has its own advisory board. The staff and their assistants for 1928-29, who, with the exception of Dr. Cook, were all newly appointed were as follows: Walter Wheeler Cook, A.M., LL.M.; Leon Carroll Marshall, A.M., LL.D.; Herman Oliphant, A.B., J.D.; Hessel Edward Yntema, Ph.D., S.D.J. President of the University, Frank Johnson Goodnow, LL.D.

JOHNSTON, WILLIAM DAWSON. American librarian, died at Washington, D. C., November 18. He was born at Essex Center, Vt., June 11, 1871, and was graduated from Brown University in 1893. After studying at the University of Chicago, 1893-94, he attended Harvard, 1897-98, receiving the A.M. degree. He had been an instructor of history at the University of Michigan, 1894-97, and in 1899 he received a similar appointment at Brown. Becoming interested in bibliography, he accepted a position as assistant at the Library of Congress in 1900, where he remained until 1907, also lecturing on bibliography at Simmons College, 1905-07. He then became librarian at the Bureau of Education, in Washington, subsequently holding corresponding posts at Columbia University, 1909-14, at the public library of St. Paul, Minn., 1914-21, and at the American Library in Paris, 1921-25. Renewing his association with the Library of Congress in 1926, he was made European representative. He had returned temporarily to the United States at the time of his death, in order to negotiate important business of the library. Dr. Johnston received the Litt.D. degree from Rutgers College in 1911. Besides contributing to library journals, he wrote *History of the Library of Congress*, vol. i (1904); and collaborated with I. G. Mudge in *Special Collections in Libraries in the United States*.

JUGO-SLAVIA. A Balkan state, formed after the War, comprising under a federal form of government the following territories: The formerly independent kingdoms of Serbia and Montenegro; Bosnia and Herzegovina; Croatia and Slavonia, former autonomous states of Hungary, portions of the Banat, Backa, and Baranja, integral parts of Hungary proper; Dalmatia, a former province of the Austrian Empire; and Slovenia, composed of portions of former Austrian provinces. Capital, Belgrade.

AREA AND POPULATION. According to the census of Jan. 31, 1921, the area of Jugo-Slavia was 96,134 square miles and the population 12,017,323, representing a density of 125 to the square mile. The majority of the inhabitants speak Serbian and Croatian. Other important linguistic groups are the Slovene and other Slavic languages. German, Rumanian, Hungarian, and Albanian. The principal cities with their populations, according to the 1921 census, are: Bel-

grade, 111,740; Zagreb (Agram), 108,338; Subotica, 101,857; and Serajevo, 66,317.

EDUCATION. Education is compulsory, and in all the primary schools under the Ministry of Education it is free. According to the latest available statistics, those for 1925-26, there were 7208 elementary schools with 17,576 teachers and 786,324 pupils. The number of secondary schools was 173 with 3595 teachers and 83,399 pupils. There were also 44 training colleges for elementary school teachers with 454 instructors and 7549 students. Of civil schools there were 155, with 1423 teachers and 26,635 pupils. There were also 19 commercial schools with 185 teachers and 2698 pupils. There are three universities in the kingdom: Belgrade, with 143 professors and 6114 students; Zagreb, with 145 professors and 3175 students; and Ljubljana, with 72 professors and 1031 students.

PRODUCTION, ETC. The country is rich in natural resources, comprising large tracts of fertile soil, varied and abundant mineral deposits, wide forest areas, and the power, largely undeveloped, of many watercourses. Agriculture is the basic industry of the country and is closely followed in importance by cattle raising and forestry. Approximately 85 per cent of the total population is engaged in agricultural pursuits, and more than 27,181,480 acres, or about 45 per cent of the entire area, are devoted to agriculture. Cereals cover approximately 80 per cent of the area under cultivation. Corn is the leading crop, with wheat a close second. These two cereals furnish about 85 per cent of the total grain production and normally constitute the most valuable item of export. Barley, rye, oats, and other grains are also grown.

CROPS: AREA AND PRODUCTION, 1926-1927

Crop	Area (thousands of acres)	Production (thousands of units—bushels, except as indicated)		
			^a Unit, metric ton.	^b Unit, pound.
Wheat	4,178	4,522	71,428	56,568
Rye	500	516	7,454	5,923
Barley	867	966	17,275	14,449
Oats	871	936	24,645	20,114
Corn	4,929	5,097	134,251	84,344
Potatoes	548	558	34,539	37,169
Sugar beets	86	103	591 ^a	691 ^a
Tobacco	38	27	31,864 ^b	14,748 ^b
Grapevines	432	441	76,923 ^c	75,428 ^c
Hemp fibre	68	87	56,964 ^b	68,648 ^b
Flax fibre	30	32	16,588 ^b	18,518 ^b

^a Unit, metric ton. ^b Unit, pound. ^c Unit, gallon of wine.

The raising of livestock is the second industry of importance in the kingdom, normally supplying from 25 to 30 per cent of total exports. The forestry industry ranks first as regards capital invested, and normally is third in total value of exports. It is estimated that more than 1,000,000,000 dinars, or about one-third of the capital invested in industrial enterprises, is placed in the development of forest products. Forests cover 18,745,340 acres, or about 30.5 per cent of the entire area of the country. The State owns 47.7 per cent of the forest lands, private individuals 33.3 per cent, and the remainder is owned by municipalities and other public organizations.

Industrial development, excluding the forestry industry, is still in its infancy. There are, however, several small but active industries, including the textiles, chemicals, paper, ceramics, leather and tanning, etc., but these with the exception of the chemical industry, produce chiefly for home consumption.

The minerals of the kingdom are classified chiefly as follows: Metallic minerals, comprising ores of copper, lead, iron, gold, silver, aluminum, molybdenum, manganese, chromium, and antimony; non-metallic, comprising sulphur and asphalt; fossil fuels, comprising black coal, brown coal, and lignite; useful rocks, such as marble, limestone, granite, cement marl, and gypsum; mineral wells, comprising salt wells and petroleum wells. Coal is the most important mineral resource of the country, but production of the higher grades is insufficient for home needs. Mining has been carried on in all the provinces, but development, except in regions adjacent to ports, has been hampered by lack of means of communication.

COMMERCE. For the first time since 1923 the annual foreign-trade balance was unfavorable in 1927. This was brought about by a sharp decline in exports, which were 18.3 per cent less than in 1926, whereas imports decreased only 4.6 per cent.

FOREIGN TRADE OF JUGO-SLAVIA FOR 1927

Commodity	Quantity	Value (million dinars)
IMPORTS		
Cotton, yarns, tissues, etc. metric tons..	32,531	1,680.1
Wool, yarns, tissues, etc. do.....	7,839	723.2
Iron and iron articles do.....	150,105	688.8
Food products do.....	118,522	467.2
Skins, hides, etc. do.....	7,005	252.4
Mineral oils do.....	115,715	225.4
Glass and glass articles do.....	10,570	60.2
Machines, instruments and apparatus do.....	20,541	346.6
Coal do.....	449,206	165.3
Electrotechnical machinery do.....	3,114	135.5
Vehicles do.....	5,395	130.7
Vegetable oils do.....	7,289	75.4
Sacks do.....	5,296	70.1
Chemicals, inorganic do.....	7,266	41.6
Flax and hemp tissues do.....	1,449	37.3
Articles of wood do.....	3,227	46.4
Paper for printing do.....	9,512	50.1
Hats do.....	117	37.4
Lemons and oranges do.....	10,676	35.2
Porcelain articles do.....	2,256	28.4
Medical preparations do.....	137	26.7
All others do.....	863,489	7,286.3
Total	1,331,257	7,286.3
Equivalent in dollars		128,312,000
EXPORTS		
Wood for building metric tons..	1,150,071	885.4
Hogs head.....	421,147	518.0
Eggs metric tons..	26,350	512.9
Cattle head.....	132,242	354.5
Corn metric tons..	197,689	387.2
Crude copper do.....	13,395	287.6
Fresh meat do.....	17,141	247.4
Hops do.....	4,096	197.7
Wheat do.....	64,053	195.5
Prunes do.....	32,283	156.5
Wood for fuel do.....	557,365	127.6
Small cattle head.....	912,561	121.5
Cement metric tons..	317,427	116.6
Fresh fruit do.....	41,028	110.3
Hemp do.....	16,941	97.5
Horses head.....	39,470	91.1
Lead in bars metric tons..	9,300	71.4
Beans do.....	28,160	64.1
Other grains do.....	37,675	80.3
Wheat flour do.....	12,665	59.2
All others do.....	1,725,820	1,797.8
Total value		6,400.1
Equivalent in dollars		112,312,000

Corn and wheat showed the largest decreases among the exports; shipments of lumber and livestock increased. The decline in imports was evenly distributed among the principal items. Austria was first as a source of Jugo-Slav imports, furnishing 19.55 per cent. It was followed by Czechoslovakia, Italy, Germany, and Great Britain in the order named. Italy led as a country of destination, taking 24.84 per cent of total exports. Italy was followed by Austria, Czechoslovakia, Germany, and Greece. Imports from the United States were valued at \$4,488,000 and exports to the United States at \$846,650.

FINANCE. The proposed budget for the 1928-29 fiscal year, as submitted to Parliament, showed expenditures of 11,592,794,000 dinars and revenues of 11,555,794,000 dinars, or a deficit of 37,000,000 dinars. The reduction from the preceding year (receipts and expenditures in 1927-28 balanced at 11,690,000,000 dinars) was based on adverse agricultural developments, which were expected to affect the tax-paying capacity of the population. This was the first time that a budget estimate had indicated a deficit; in fact, budget operations since 1922, when the public finances entered a period of stability, had shown a surplus of receipts over expenditures. The latest public statement concerning the debt of the country was that of June 30, 1925, when the consolidated debt totaled \$429,980,695, and the floating debt \$13,010,300.

COMMUNICATIONS. During 1927, the volume of traffic over the railroads was much less than in the preceding year, largely because of the smaller harvest and consequent decline in exports. Special attention was devoted to the railroad construction programme, and an important loan was obtained abroad for such work. Approximately 70 kilometers of railroad line were completed during the year, while work was in progress on 1800 kilometers. The railroad system was recognized as the weakest link in the national economy, and further development of the country's natural resources was dependent upon the expansion of the transport system. There were about 6200 miles of railway line, of which 5564 miles belonged to the Government. In 1926 there were 37,713,000 passengers and 17,236,000 metric tons of freight carried; gross receipts were \$39,241,000, of which approximately two-thirds represented income for passenger service.

GOVERNMENT. Under the constitution adopted June 28, 1921, executive power is vested in the King and legislative power in a single chamber of National Assembly, which consists of 315 members. As a result of the election of Sept. 11, 1927, the party grouping the National Assembly was as follows: Radicals, 111; Independent Democrats, 23; Democrats, 61; National Agrarian party (Raditch party), 62; Agrarians, 9; Mohammedans, 18; People's party, 21; other parties, 10. The King in 1928 was Alexander I, Born Dec. 17, 1888, who succeeded to the throne with full royal rights on Nov. 6, 1921. The cabinet as formed on Feb. 23, 1928, was as follows: Prime Minister, V. Vukitchevitch; Finance, B. Markovitch; Foreign Affairs, V. Marinkovitch; Interior, A. Koroshetz; Justice, M. Vuitchitch; Public Worship, M. Simonovitch; Posts and Telegraphs, V. Kotitch; Education, Dr. Groll; Public Health, V. Popovitch; Forests and Mines, A. Mijovitch; Agrarian Reform, V. Andvitch; Unification of Laws, I. Shumenkovitch; Agriculture, S. Stankovitch; Public Works, P. Markovitch;

Social Affairs, C. Radovitch; War, General Hadzitch; Communications, General Milosavljevitch; Commerce and Industry, M. Spaho.

HISTORY. The year was a most gloomy one for Jugo-Slavia from the very beginning to the end. As noted above under GOVERNMENT a new Government was formed under the leadership of V. Vukitchevitch, the third one he had formed in the last year or two. It was purely a makeshift affair, not being satisfactory in any way to the Croats, whose support was necessary if the Government was to do any business. The question of Croatian autonomy was in the limelight the entire year and its acuteness blotted out practically every other question of internal politics and foreign relations. The Croat question has been a very prominent one from the very formation of the Jugo-Slav Kingdom. Summed up very briefly it might be said that the cause of the conflict had been the constant desire of the Croatian party, under the leadership of Stephan Raditch, to establish an autonomous Croatia in Jugo-Slavia, somewhat similar to the old Austro-Hungarian dual régime. The opponents of the Croatian dream were the Serbians who believed in a strong centralized kingship with as little self-government as possible for the various political units which make up the country. In the offing appeared the Slovenes who also desired local autonomy, although they are not as aggressive as the Croats.

When one considers that many authorities call this country the Kingdom of the Serbs, Croats, and Slovenes, the problem of decentralization may be better understood. The three branches of the South Slav races are opposed to each other in many ways. If possible it might be said that the Croats and Slovenes are more polished and civilized than the Serbians, who outnumber them by more than a million. The problem of welding these three groups into one homogeneous nation was one that would tax the craft of a Bismarck or Cavour, and it might be said that no such personality had as yet appeared in Jugo-Slav public life. King Alexander, while possessing great executive ability, was distinctly a Serb at heart, and apparently had little sympathy for the national aspirations of the Croats and Slovenes.

The Croatian opposition to the Government came to a head in the early summer over the question of ratification of treaties with Italy concerning the question of colonization in Dalmatia. The opposition, led chiefly by the Croats, was bitterly opposed to the treaties which had been negotiated three years previous and severe rioting and anti-Italian demonstrations were prevalent throughout the country. Charges and counter charges were made by the Italian and Jugo-Slav governments and demands were made on both sides for satisfaction. For a time the war clouds seemed about to appear on the horizon. Foreign Minister Marinkovitch seemed to favor the ratification of the treaties, for which attitude he was bitterly assailed by the opposition.

The climax of the debate on the treaties came on June 20, when Punica Ratchitch, a member of the Serbian Radical party, attacked Stephan Raditch, the Croat leader and several of his followers with a revolver. Raditch's nephew and another Croat deputy were killed outright and Stephan Raditch himself was seriously wounded. The entire country was in an uproar and rioting

broke out particularly in Zagreb, the capital of Croatia. Raditch hung on to life tenaciously for a little while and the King offered all kinds of promises to him and his party to heal the breach. The King's advances were abruptly rejected and the Croats determined to boycott the Government politically, socially, and financially. As a result of the shooting episode and the resultant unrest and disorder throughout the country, the Vukitchevitch cabinet resigned on July 4. Attempts to get the injured Raditch to form a cabinet or at least to outline a policy on the strength of which the Croats would support the Government failed and ultimately the King called upon Anton Koroshetz, the Slovene clerical leader, to organize a cabinet. The new cabinet included Croat representatives, who, however, refused to cooperate. The death of Stephan Raditch, which occurred on August 8 (consult his biography) widened the breach between the Serbian and Croatian groups and permitted government to continue chiefly because of the abstention of the Croatian leaders. With a "rump" legislative body, the objectionable treaties with Italy concerning colonization in Dalmatia were concluded.

For the balance of the year the situation remained *in statu quo*. The Croats refused to participate in the government and went so far as to establish their own Parliament at Zagreb and issue a statement to the effect that acts of the Belgrade Parliament would not be considered law in Croatia. The new leaders of the Croats, Dr. Macek and M. Pribicevitch, refused all overtures from the Koroshetz government, and demanded complete autonomy for Croatia. The King and the Serbian leaders were unwilling to grant the Croats' demands, but stated that they would grant partial autonomy. This failed to satisfy, and as the year closed Croatia was virtually under martial law, with military leaders in control of all the districts and the members of the Opposition party being prosecuted, in many cases on trumped up charges. The King adopted very strenuous measures, even going to the extreme of compelling the Croats to participate in the celebration of the tenth year of the establishment of Jugo-Slavia. Quite obviously such tactics did not bring the opposing groups any closer together and it was the opinion of most observers that King Alexander had only two courses open to him at the end of the year if he wanted to keep his kingdom intact, one was the formation of an absolutely non-partisan government after holding a fair election, and the other was the establishment of a dictatorship under his control. The future looked very black and unpromising. Premier Koroshetz resigned on December 30.

JUIILLARD FOUNDATION. See MUSIC.

JUNIOR COLLEGES. See UNIVERSITIES AND COLLEGES.

JUVENILE DELINQUENCY. See CHILD WELFARE.

KAISER WILHELMSLAND, ki'zer-vil-helmslant'. A mandated territory under the control of Australia. It was a colony of Germany at the outbreak of the War in 1914, but was shortly captured by Australian forces. It occupies the northern part of S. E. New Guinea. On Dec. 17, 1920, the League of Nations assigned it to Australia under a mandate. See GERMAN NEW GUINEA.

KAMERUN, kame-roon', CAMEROON or CAMEROONS. The name applied to the territory between British Nigeria and French Equatorial

Africa, extending from the Gulf of Guinea to the south shore of Lake Chad; formerly a German protectorate, but occupied by the British and French during the War and divided in 1919 between France and Great Britain, the former getting far the greater part. Area (exclusive of the tract transferred to Germany from the French Congo in 1911), 191,130 square miles; population, 2,540,000.

FRENCH KAMERUN. At the time of the division of the former German protectorate in 1919. France received an area of 166,489 square miles (also exclusive of the area ceded to Germany in 1911, which, after the War, was annexed to French Equatorial Africa); population in 1926, 1,878,683, including 1570 Europeans. The seat of the Government is at Yaoundé, and the chief port is Donala. In 1925 there were 73 government schools with a total attendance of 10,549. The principal products are cacao, coffee, ivory, tobacco, palm oil, and palm nuts. In 1926 the imports amounted to 192,000,000 francs, and the exports to 155,000,000 francs. In the same year 217 vessels entered at the port of Donala. The general budget for 1927 balanced at 41,768,350 francs and there was a special railway budget of 16,000,000 francs. There are 369 miles of railway. The colony was created an autonomous territory by decree of Mar. 28, 1921, and is under the administration of a French Commissioner. Commissioner in 1928, M. Marchand.

BRITISH CAMEROONS. Great Britain received about 31,000 square miles of Kamerun in the division of 1919. The population is estimated at about 660,000. Cacao, palm kernels, rubber, hardwood, and ivory are the principal products. In 1926 the imports were £275,439 and the exports £220,740. In the same year 136 vessels of 265,536 tons entered the port of Victoria. The revenue and expenditure for the British Cameroons are now incorporated with those of Nigeria. The Governor of Nigeria is the administrator of the British Cameroons. See NIGERIA.

KANSAS. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 1,769,257. According to the State census taken in 1925 the population was 1,812,986. The estimated population on July 1, 1928, was 1,835,000. The capital is Topeka.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928.

Crop	Year	Acreage	Prod. bu.	Value
Wheat	1928	10,473,000	177,833,000	\$167,144,000
	1927	9,946,000	111,327,000	130,252,000
Corn	1928	6,634,000	179,118,000	116,427,000
	1927	5,897,000	176,910,000	107,915,000
Hay	1928	2,396,000	4,646,000*	39,023,000
	1927	2,625,000	5,476,000*	43,524,000
Oats	1928	1,801,000	37,729,000	15,846,000
	1927	1,801,000	30,574,000	13,758,000
Grain sorghum	1928	1,234,000	28,633,000	17,466,000
	1927	1,547,000	32,487,000	19,492,000
Potatoes	1928	54,000	7,560,000	3,402,000
	1927	49,000	5,390,000	5,390,000
Barley	1928	633,000	17,661,000	8,830,000
	1927	452,000	5,695,000	3,132,000

* tons.

MINERAL PRODUCTION. The State produced in 1926 minerals to a total value of \$165,060,612; in 1925, of \$142,944,214. Petroleum production, which furnished the greater part of these totals, was slightly less active as to quantity in 1927, while the fall in price occasioned a severe drop

in the value total for this item. The output by quantity was 40,740,000 barrels in 1927 and in 1926, 41,498,000; by value it was \$57,900,000 (estimated) for 1927, as against \$93,800,000 for 1926. Lead was produced to a total of 27,497 short tons in 1927 as compared with 28,463 in 1926, with a value, for 1927, of \$3,464,622, and for 1926, of \$4,554,080. Zinc production fell somewhat in quantity to 109,427 short tons in 1927, from 126,307 in 1926; and in value, to \$14,006,656, from \$18,946,050. The coal output, adversely affected by labor conditions, was 3,443,762 net tons in 1927, as against 4,416,480 in 1926; in value it was \$9,648,000 in 1927 and in 1926, \$12,535,000. The natural gas output of 1926 was 38,095,000 M cubic feet, a material increase over the 26,917,000 M cubic feet of 1925; in value it was: 1926, \$12,547,700; in 1925, \$9,991,000. From natural gas were derived 33,000,000 gallons of gasoline in 1927, as compared with 25,369,000 in 1926; the value was, for 1927, \$1,563,000 (estimated); for 1926, \$2,105,000. Cement production of 1927 was 6,180,255 barrels; of 1926, 6,357,581. Cement shipments attained \$9,939,412 in 1927, and in 1926, \$9,757,699. Clay products totaled \$3,969,040 for 1926, as against \$4,345,971 for 1925. Salt was produced to a total value of \$2,741,534 in 1926; in 1925, of \$2,494,423. Stone, gypsum, sand, and gravel were each produced to a value of over \$1,000,000 in 1926.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$14,254,973 (of which \$691,604 was aid to local education); for conducting public service enterprises, \$440,562; for interest on debt, \$1,215,202; for permanent improvements, \$9,105,088; total, \$25,015,825 (of which \$9,773,112 was for highways, \$1,789,743 being for maintenance and \$7,983,369 for construction). Revenues were \$27,086,679. Of this, property and special taxes formed 39.3 per cent, departmental earnings and charges for officials' services 11.5 per cent, and sales of licenses and the tax on gasoline 34.8 per cent. Property valuation was \$3,674,105,303; State taxation thereon, \$9,502,190. Net State debt on June 30, 1927, was \$24,836,544.

TRANSPORTATION. The total number of miles of railroad line under operation in the State on Jan. 1, 1928, was 9362.18. There were built in 1928, 6.96 miles of additional first track.

EDUCATION. The Kansas School Code Commission prepared an extensive revision of the school code for submission to the Legislature in 1929. For the year 1928 the State Department of Education reported the following statistics: School population, 543,390; total enrollment in public schools, 425,424; enrollment in common schools including kindergarten, 315,864; enrollment in high schools including both junior and senior, 109,560; expenditure for education (1928) public schools, \$39,409,848.86; average salaries of school teachers per month: men, \$164.97; women, \$139.81.

CHARITIES AND CORRECTIONS. Since 1905 the State Board of Administration has exercised centralized control over the State institutions of care and custody. It had full charge in 1928 of 16 institutions. These, with their inmate populations, were: State Penitentiary, Lansing, 1750; Reformatory (for prisoners from 16 to 21 years), Hutchinson, 900; Boys' Industrial School, Topeka, 350; Girls' Industrial School, Beloit, 150;

Women's Industrial Farm, Lansing, 150; Hospitals for the insane at Topeka, 1700; Osawatomie, 1424; Larned, 628; Hospital for Epileptics, Parsons, 628; Home for the Feeble-Minded, Winfield, 800; State Orphans' Home, Atchison, 150; School for the Deaf, Olathe, 200; School for the Blind, Kansas City, 125; Vocational School (colored), Topeka, 158; Western University (colored), Quindaro, 125; Tuberculosis Sanatorium, Norton, 200.

LEGISLATION. The State legislature convened in special session at the call of Governor Paulen on July 19. It was summoned to pass an amendment of the State constitution in order to render Kansas eligible for further Federal contribution to the road-building outlays of the State. Kansas, though receiving such aid through the United States Secretary of Agriculture during many years of the operation of the Federal-aid plan, had omitted to create a highway department to expend road construction funds, as the Federal act required. Successive extensions of time to allow States to create properly empowered departments had expired, leaving Kansas the only State without one. One year before the expiry of the last extension (in 1929), Secretary of Agriculture Jardine wrote to Governor Paulen at the end of June, 1928, pointing out that the existing highway commission of Kansas lacked control of adequate funds to meet Federal road-aid contributions, and lacked authority to determine roads and types of improvement, and that unless these and other defects were remedied, the Federal aid to the State must cease. The amount of this aid was approximately \$2,000,000 a year. The legislature, summoned in consequence of this situation, passed a series of constitutional amendments designed to cover the needs expressed in the Jardine letter. These amendments were submitted to popular vote in November, for ratification. The legislature adjourned without undertaking other business of consequence.

POLITICAL AND OTHER EVENTS. The State law rendering directors of State banks personally liable for deposits received by their banks after these had become insolvent was contested in cases relating to a bank failure that had occurred in 1923 in Butler County, and the contest was carried to the U. S. Supreme Court. The court by a decision of May 14 sustained the statute, and affirmed the decision of the State supreme court awarding damages to a depositor. The State Federation of Labor passed a resolution in favor of restoring the existence of the State labor department, which in its former career had met with labor opposition. An election held in Kansas City April 17 on the proposal to ratify a grant by the city commissioners of a 20-year franchise to the Knorrp interests to supply industrial natural gas resulted in ratification. The Doherty interests, already in the field, opposed the granting of the rival franchise. In Douglas County the commissioners undertook the removal of billboards obstructing the view of travelers on the county highways. The State Supreme Court in May sustained their exercise of power in doing so. Southwest of Erie, the State, in its game and fish preserve, created a lake for fishing purposes, which was named Lake Neosho, the first of a series of similar lakes to be formed. Work on the formation of several State parks was carried on, including parks in Neosho, Meade, Crawford, Ottawa, and Scott counties. There were under con-

struction in 1928. State buildings of a total cost of \$3,000,000, including Snow Hall at the State University, a training school at Emporia, and other educational buildings.

ELECTION. At the election of November 6 the voters of the State gave a majority for the Republican candidates. Hoover and Curtis, greater than that for Coolidge and Dawes in 1924. The fact that a son of the State, Senator Charles Curtis, was Republican candidate for vice president afforded an offset to the adverse feature of agricultural opposition to the Hoover candidacy. The popular vote for President in 1928 was: Hoover (Rep.), 513,672; Smith (Dem.), 193,003. One Democratic Representative was reelected, the rest of the State delegation sent to the House of Representatives being Republican. Clyde M. Reed, Republican, was elected Governor, defeating Chauncey B. Little, Democrat, and with him were elected Republican State officers.

OFFICERS. Governor, Ben S. Paulen; Lieutenant-Governor, D. A. N. Chase; Secretary of State, F. J. Ryan; Treasurer, Carl R. White; Auditor, Will J. French; Attorney-General, William A. Smith.

JUDICIARY. Supreme Court: Chief Justice, William A. Johnston; Justices: Rousseau A. Burch, Henry F. Mason, John Marshall, John S. Dawson, W. W. Harvey, and Richard J. Hopkins.

KANSAS CITY. See MISSOURI.

KANSAS, UNIVERSITY OF. A State institution of higher education at Lawrence, Kans., founded in 1864. The 1928 autumn registration was 4224, of whom 129 were registered in more than one school, leaving a total enrollment of 4095. Of this number 1528 were women and 2567 men, distributed as follows: Graduate school, 239; college of liberal arts and sciences, 2314; engineering, 561; fine arts, 329; law, 143; pharmacy, 80; medicine, 305; education, 122; and business, 131. The 1928 summer session had an enrollment of 1883, of whom 937 were women and 746 men. The faculty numbered 280. The endowment fund amounted to \$230,000 and the income for the year, including the balance carried over from 1927, was \$2,420,608. There were 200 volumes in the library. Chancellor, Ernest Hiram Lindley, LL.D.

KARAFUTO. The name applied to the Japanese half of the island of Sakhalin (see SAKHALIN), which comprises that portion south of the 50th parallel of N. latitude. Area, approximately 13,934 square miles; population, according to the census of 1925, 203,504. The chief industry is the herring fisheries, although the colony is suitable for agriculture and pasturage. The Japanese Government supplies Japanese settlers with seed and domestic animals. There are also valuable forest lands and mines, the chief minerals being coal and alluvial gold. The budget for the year ending Mar. 31, 1927, balanced at 18,791,079 yen.

KATTE, EDWIN BRITTON. American electrical engineer, died at Irvington-on-the-Hudson, N. Y., July 19. He was born at St. Louis, Mo., Oct. 16, 1871. He was graduated from Cornell University (M.E.), 1893; studied and served as apprentice in the H. R. Worthington shops, Brooklyn, N. Y., 1894-96; and for two years was assistant engineer to the Park Avenue Improvement Commission of New York City. Thereafter he was successively draftsman, assistant engineer, mechanical engineer, and electrical engineer of the New York Central & Hudson River R. R., becoming

chief engineer in 1906, with full charge of design, construction, and operation of the electrical traction systems. He was also consulting electrical engineer of the Cleveland Union Terminals Company. He was recognized as one of the leading engineers in America in the electrification of steam railroads. He was a former vice president of the American Society of Mechanical Engineers, a fellow of the American Institute of Electrical Engineers, a member of the American Railway Engineering Association, and a former president of the New York Electrical Society.

KELLEY, HOWARD G. American railway engineer and official, died at San Diego, Calif., May 15. He was born at Philadelphia, Jan. 12, 1858, and was graduated from the Polytechnic College of Pennsylvania. He began his railroad work as an engineer in the service of the Northern Pacific in 1881, in the days when that railroad was being pushed westward. He remained with the road until 1884; then, until 1887, he was a superintendent of mines in Montana. After three years as resident engineer and superintendent of bridges and buildings of the St. Louis Southwestern Railway system, he served as chief engineer until 1898. His next work was done as chief engineer of the Minneapolis & St. Louis R. R. Co., including the Iowa Central, 1898-1907, and until May, 1899, as consulting engineer of the St. Louis Southwestern. In 1907 he was appointed chief engineer of the Grand Trunk Railway system, and under his control more than 10,000 miles of new track was laid. In 1911 he became vice president in charge of operation, maintenance, and construction, and in 1917 president of the system. He was also chairman of the board of the Iowa Vermont Ry. When the Canadian Government took over the Grand Trunk and included it as part of the Canadian National system, Mr. Kelley retired. He received the order of St. John of Jerusalem in England, in 1913.

KELLOGG TREATIES. Under the leadership of the American Secretary of State, Frank B. Kellogg, the United States entered upon one of the most extensive efforts thus far undertaken to diminish the possibilities of war. The Briand proposals of 1927 (see YEAR BOOK, 1927) had been applied in a series of multilateral treaties that had been described in England as "potentially the biggest event in modern diplomatic history." The American Secretary of State, backed up by the President, the Chairman of the Committee on Foreign Relations of the Senate, and by a widespread public opinion offered to the nations of the world a treaty designed to do away with war.

M. Briand, the French Minister of Foreign Affairs, took the initial step on April 6, 1927, in a statement to representatives of the press, in which he suggested the abolition of war as between France and the United States. Interest in this proposal led to the exchange of six notes between M. Briand and Mr. Kellogg beginning December 28, 1927. From these it appeared that Secretary Kellogg desired to enlarge M. Briand's proposal to include a general multilateral treaty, not only between France and the United States, but between all the powers. Mr. Kellogg wished to ban all war, whereas M. Briand would limit the ban to wars of aggression. On April 13, Secretary Kellogg invited the British, the German, the Italian, and the Japanese governments to join France and the United States in an agreement to sign a treaty the spirit and substance of which was as follows:

Deeply sensible that their office imposes upon them a solemn duty to promote the welfare of mankind; inspired by a common desire not only to perpetuate the peaceful and friendly relations now happily subsisting between their peoples, but also to prevent war among any of the nations of the world; desirous by formal act to bear unmistakable witness that they condemn war as an instrument of national policy and renounce it in favor of the pacific settlement of international disputes; and hopeful that, encouraged by their example, all the other nations of the world will join in this humane endeavor and by adhering to the present treaty as soon as it comes into force bring their peoples within the scope of its beneficent provisions, thus uniting the civilized nations of the world in a common renunciation of war as an instrument of their national policy, they have decided to conclude a treaty and for that purpose have appointed as their respective plenipotentiaries . . . and have agreed upon the following articles:—(These are given below.)

France mentioned reservations which were not mentioned in the Kellogg statement. She believed that she should not give up her rights of legitimate defense within the framework of existing treaties. She purposed to do no violence to her obligations under the Covenant of the League of Nations, the Locarno Agreement, or to her alliances with some nine other powers, but M. Briand felt that a multilateral pact such as proposed by Mr. Kellogg was practically possible only with reservations. He granted that the proposal would become most effective when all the governments were invited to participate and that any treaty which did not depend upon the security of all the States concerned would expose its signatories to certain real dangers. Senator Borah suggested if a multilateral pact was not to become an instrument of oppression, the failure of any one signatory to observe its engagement should automatically release the other signatories from their engagements toward the defaulter. It was with these qualifications that the French statesman agreed with the United States to the submission of the draft treaty for the consideration of the German, British, Italian and Japanese governments. These French reservations were not referred to in the Kellogg Treaty or letter of transmission.

Thus there were wide differences between the American and the French positions. Mr. Kellogg rejected the French reservations and the French opposed Mr. Kellogg's plan without reservations. Mr. Kellogg proposed to renounce war as an instrument of national policy without conditions. The French reserved for themselves the right to make war under the war clauses of the Covenant of the League of Nations, the treaties of Locarno, and their treaties of alliance. Mr. Kellogg was offering a substitute for alliances. The French proposed to adhere to their alliances. Mr. Kellogg proposed two things—the renunciation of war by the powers as an instrument of national policy, and the peaceful settlement of all disputes. The French would add a variety of amendments. The Kellogg proposal was that the great powers should scrap their military alliances, the military sections of the Covenant of the League, and other commitments, for a simple, unconditional treaty to renounce war. To the logically minded French, this seemed a bit too airy. France approved the transmission to the four governments of the original Briand proposal of last June and of the six notes subsequently exchanged between France and the United States. Thus six major governments of the world, with the consent of France, were in a position fully to explore the entire situation.

Speaking upon this point, Mr. Kellogg said:

The Government of the United States attaches the very greatest importance to the negotiations which have thus been initiated among the six powers and it is my earnest hope that after the problem has been studied by all six powers in the light of their common desire to agree upon a practicable method for the promotion of world peace, our joint efforts may be crowned with success.

Certainly, so far as the Government of the United States is concerned, no effort will be spared to find a solution for any technical difficulties which may arise in the course of the negotiations and I am confident that the other governments concerned will be no less ready to do everything within their power to facilitate agreement upon the terms of an effective treaty for the renunciation of war.

After the exchange of numerous notes between France and the United States and the other countries which the latter had suggested, the following draft treaty was finally agreed upon:

ARTICLE I

The High Contracting Parties solemnly declare in the names of their respective peoples that they condemn recourse to war for the solution of international controversies, and renounce it as an instrument of national policy in their relations with one another.

ARTICLE II

The High Contracting Parties agree that the settlement or solution of all disputes or conflicts of whatever nature or of whatever origin they may be, which may arise among them, shall never be sought except by pacific means.

ARTICLE III

The present treaty shall be ratified by the High Contracting Parties named in the preamble in accordance with their respective constitutional requirements, and shall take effect as between them as soon as all their several instruments of ratification shall have been deposited at Washington.

This treaty shall, when it has come into effect as prescribed in the preceding paragraph, remain open as long as may be necessary for adherence by all the other powers of the world. Every instrument evidencing the adherence of a power shall be deposited at Washington, and the treaty shall immediately upon such deposit become effective as between the power thus adhering and the other parties hereto.

It shall be the duty of the Government of the United States of America to furnish each Government named in the preamble and every Government subsequently adhering to this treaty with a certified copy of the treaty and of every instrument of ratification or adherence. It shall also be the duty of the Government of the United States of America telegraphically to notify such Governments immediately upon the deposit with it of each instrument of ratification or adherence.

In faith whereof the plenipotentiaries have signed this treaty in the French and English languages, both texts having equal force, and hereunto affix their seals.

Fifteen nations signed the treaty in the Salle de l'Horloge in Quai d'Orsay, Paris, on Monday afternoon, August 27, a year and a quarter after M. Briand sent his message to the American people through the Associated Press. The government heads who signed for the various nations were: Dr. Gustav Stresemann for Germany; Frank B. Kellogg for the United States; Paul Hymans for Belgium; Aristide Briand for France; Lord Cushendun for Great Britain, William Lyon Mackenzie-King for Canada; Alexander John McLachlen for Australia; Sir Christopher James Parr for New Zealand; Jacobus Stephanus Smit for South Africa; William Thomas Cosgrove for the Irish Free State; Lord Cushendun for India; Count Gaetano Manzoni for Italy; Count Uchida for Japan; A. Zales for Poland; Dr. Edward Benes for Czechoslovakia.

Mr. Kellogg did not speak. The only address was by M. Briand who paid glowing tribute to Mr. Kellogg, Dr. Stresemann, and the absent Sir Austen Chamberlain, and then said:—

The League of Nations, a vast political undertaking of insurance against war and powerful institution of organized peace, where there is room to welcome all



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FRANK BILLINGS KELLOGG

SECRETARY OF STATE OF THE UNITED STATES



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ARISTIDE BRIAND

MINISTER OF FOREIGN AFFAIRS OF FRANCE

fresh contributions to the common work, cannot but rejoice at the signing of an international contract whereby it is to benefit.

Far from being inconsistent with any of its obligations, this new act, on the contrary, offers it a kind of general reinsurance. Thus those of its members who will soon be able to ask the League to register today's contract will rightly feel they are bringing it a precious token of their attachment and loyalty.

In his address of welcome M. Briand said:

For the first time, on general plans accessible to all nations in the universe, a congress of peace does something else than settle politically the immediate conditions of a particular peace such as they are imposed in fact by the results of war.

For the first time in the face of the whole world, through a solemn covenant involving the honor of great nations, all of which have behind them a heavy past of political conflict, war is renounced unreservedly as an instrument of national policy; that is to say, in its most specific and dreaded form—selfish and wilful war. Considered of yore as of divine right, and having remained in international ethics as an attribute of sovereignty, that form of war becomes at last juridically devoid of what constituted its most serious danger—its legitimacy. Henceforth, branded with illegality, it is by mutual accord truly and regularly outlawed so that a culprit would incur the unconditional condemnation and probably the enmity of all its co-signatories.

Peace is proclaimed. That is much; but it still remains necessary to organize it. In the solution of difficulties right and not might must prevail. That is to be the work of to-morrow.

On the day following the Paris ceremony, the United States Government sent from Washington a note to 48 nations inviting their adherence to this general pact for the renunciation of war. The invitation to Russia was sent by France, inasmuch as the United States had no diplomatic relations with the Soviet. Twenty-one nations up to the end of the year had given notice of adherence to the pact.

At the end of the year the treaty remained to be ratified by the United States Senate. *The Peace Pact of Paris*, by David Hunter Miller, was published in New York late in the year.

KENLY, WILLIAM LACY. American soldier, died at Washington, D. C., January 10. He was born at Baltimore, Md., Feb. 18, 1864. He was graduated from the U. S. Military Academy in 1889 and entered the army as second lieutenant of the Fourth Artillery in June of the same year. He continued in the service until 1919, when he was retired with the rank of colonel. In the war with Spain he participated in the actions of El Caney and Santiago, and during 1899-1902 he was in the Philippines. Before the United States entered the World War, he studied aviation and although he landed in France in the Field Artillery, he soon became chief of the air service, American Expeditionary Forces. He held the post August-November, 1917. In 1918 he returned to the United States and was made director of military aeronautics, with the rank of major general in the National Army. He held this post until March, 1919, and retired in 1919. He was active in the organization of the Army Air Service Association in 1918 and was its first president. General Kenly's services abroad were recognized by the decoration of the French Legion of Honor, 1919, the British Order of the Bath, 1919, and the Italian Order of the Crown (Grand Officer), 1920. He received also the Distinguished Service Medal of the United States. After his retirement from the Army, General Kenly was vice president of the Marland Oil Company.

KENTUCKY. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,416,630. The estimated population on July 1, 1928, was 2,553,000. The capital is Frankfort.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928.

Crop	Year	Acreage	Prod. bu.	Value
Corn	1928	3,029,000	66,638,000	\$63,972,000
	1927	2,885,000	75,010,000	66,009,000
Tobacco	1928	394,700	306,000,000 ^a	58,550,000
	1927	290,200	202,269,000 ^a	43,349,000
Hay	1928	1,311,000	1,725,000 ^b	28,066,000
	1927	1,350,000	1,916,000 ^b	27,620,000
Potatoes	1928	57,000	5,985,000	4,788,000
	1927	52,000	4,732,000	6,152,000
Sweet potatoes	1928	14,000	1,246,000	1,423,000
	1927	16,000	1,488,000	1,786,000
Wheat	1928	115,000	920,000	1,270,000
	1927	296,000	2,812,000	3,796,000
Oats	1928	805,000	7,930,000	4,520,000
	1927	215,000	4,085,000	2,451,000

^a pounds, ^b tons.

MINERAL PRODUCTION. Retaining in 1926 the fourth rank among the States in the production of coal, Kentucky in 1927 in spite of the fall in the coal production of the United States as a whole, incident to labor difficulties in the industry, increased its coal output to 69,123,998 net tons, from 62,924,462 in 1926; the value of the product was \$119,249,000 for 1927, and for 1926, \$109,740,000. The coal mine employees averaged 237 days of work in 1927. Petroleum production in 1927 recovered, as to quantity, from the decline of the year previous, totaling 6,733,000 barrels, as against 6,274,000 in 1926; in value, \$11,200,000 for 1927 (estimated) in which year low prices prevailed, and for 1926, \$15,250,000. The natural gas yield of 1926, the latest reported year, was 10,410,000 M cubic feet; in 1925, 10,770,000 M. In value it was: 1926, \$3,378,000; 1925, \$3,213,000. Gasoline made from natural gas was 7,689,000 gallons in 1926, and the production in 1927 was 7,000,000 gallons. Clay products amounted for 1926 to \$7,676,858; for 1925, to \$7,853,355. Asphalt was produced in 1926 to a total of \$2,530,480; stone and sand and gravel, each to more than \$2,000,000; fluorspar, in which the State ranks as the foremost producer, to over \$1,000,000. The total mineral production of the State was, for 1926, \$146,768,273; for 1925, \$131,870,840.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$17,971,201 (of which \$5,421,646 was aid to local education); for interest on debt, \$618,388; for permanent improvements, \$11,143,001; total, \$29,732,590 (of which \$11,116,658 was for highways, \$2,599,000 being for maintenance and \$9,517,658 for construction). Revenues were \$30,719,702. Of this, property and special taxes formed 36.8 per cent; departmental earnings and charges for officials' services, 7.5 per cent; sales of licenses and the tax on gasoline, 39.5 per cent. Property valuation was \$2,923,088,336; State taxation thereon, \$10,193,642. Net funded State debt on June 30, 1927, was \$2,503,153.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 4049.43. There was built in 1928, 1 mile of additional first track.

EDUCATION. The defeat of a legislative measure to upset the system of county administration of school affairs, as established in 1920, through the county superintendents selected by county boards, was regarded by some educators in the State as an evidence that the existing system

had attained general approval. For the academic year 1927-28 the school-age population of the State was placed at 676,849. There were enrolled in the public schools 582,181 pupils. Of these, 527,770 were in the elementary schools and 54,411 in high schools. Expenditures for public-school education in the year were \$26,367,386.31. Salaries of all teachers averaged \$880.70 for the year.

CHARITIES AND CORRECTIONS. The State conducted in 1928 a series of institutions for the care of the insane and the feeble-minded and for the correction of criminals. These were governed by a State Board of Charities and Corrections and a Commissioner of Public Institutions. The institutions so governed, with the numbers of their inmates on June 30, 1928, were Eastern State Hospital (mental), Lexington, 1398; Central State Hospital (mental), Lakeland, 1894; Western State Hospital (mental), Hopkinsville, 1716; State Houses of Reform, Greendale, 544; Feeble-Minded Institute, Frankfort, 458; State Reformatory, Frankfort, 1651; State Penitentiary, Eddyville, 690.

LEGISLATION. The General Assembly of the State convened in regular session on January 3 and adjourned March 16. It enacted a measure to provide pupils in the schools with textbooks at the State's expense. This textbook law, of which the advocacy had formed a chief part of the appeal of Governor Sampson for election in 1927, rendered the State liable for an estimated expenditure of \$2,500,000 a year. Accordingly, revenue bills were introduced to produce the required sum. These failed of passage, but a measure to transfer \$400,000 a year from State school funds to help pay for the books was enacted. Under the Textbook Act, the State Textbook Commission, charged with textbook selection, was required to give local school boards the choice of three texts in high school and junior high school subjects; ten years were allowed cities to bring their textbooks gradually into conformity with the State lists. Acts passed by the Legislature to redistrict the voting subdivisions of the city of Louisville and to amend the method of registration, both demanded by the Louisville members, were vetoed by the Governor. Other measures enacted were those rendering permanent the 5-cent gasoline tax, establishing a State Judicial Council, giving women the right to claim exemption from jury service, creating a uniform State law commission, altering the method of paying county judges, permitting cities of second and third class to adopt city managers, giving those of the second class city planning and zoning powers, establishing competitive bidding in the letting of contracts by the State Purchasing Commission and furnishing an appropriation for advertising the State and bringing in new industries.

A Kentucky National Park Commission was created, with power to condemn lands and caves to become national parks. A measure licensing fishermen at a fee of \$1 was enacted. A bill providing State training schools for psychiatric nurses was signed by the governor after the close of the legislature. It then was alleged that the State Senate had not duly passed this bill. The Attorney-General of the State held that the bill, having been signed by presiding officers of both houses and approved, would become operative. Governor Sampson on March 27 vetoed certain sections of the biennial budget, thereby cutting the appropriations for certain welfare

activities by the sum of \$400,000 approximately, which thus became available for school-book purchases. The State Highway Commission was authorized by act to build toll bridges and meet the cost by bonds.

POLITICAL AND OTHER EVENTS. After the end of the legislative session a grand jury at Frankfort brought indictments against some 23 individuals charged with lobbying and offering inducements to legislators to secure their votes. James C. Wallace, former State treasurer, was convicted January 27, on a charge of having altered election returns from five counties, in the Republican primary election of 1927, when he sought the nomination for the party's candidate as auditor; W. H. Shanks, State auditor in the Fields administration, was indicted April 17 on a charge of misuse of State funds. The U. S. Supreme Court in a decision of April 30, held invalid the State law imposing a tax of 20 cents on each \$100 for the recording of mortgages not maturing in five years, which was attacked by the Louisville Gas and Electric Company, the issuer of \$18,805,000 of mortgage bonds maturing in 30 years, for which payment of the tax had been demanded; the tax was held to contravene the Fourteenth Amendment of the United States Constitution. The Democratic Executive Committee passed a resolution April 14, excluding from participation in State conventions those who had not supported the Democratic nominee in the vote of 1927, when in spite of a Democratic majority for other offices, a Republican Governor was elected.

A bipartisan racing commission personnel of five members was appointed in May by Governor Sampson. There occurred in July floods in the valleys of the Big Sandy and several other water-courses of the State. These ruined the crops on thousands of acres. Relief for sufferers was afforded by the American National Red Cross and by private contributions on the appeal of Governor Sampson. Development of a 7500-acre field of asphalt deposits in Grayson County was started in July. A drive for contributions to the cost of the projected Mammoth Cave National Park, prorated by counties, was conducted early in the year. A concrete and steel bridge over the Kentucky River south of Nicholasville was completed and was dedicated March 10. A thirty-five mile highway between Harlan and Pineville, built of concrete and forming part of the Mayo Trail, opened July 10, linked a section of the Kentucky mountain country for the first time by a modern highway route with the lowlands. The Mercer County court house at Harrodsburg, the depository of some of the oldest records in the State, including some relating to Abraham Lincoln's family, was destroyed by fire May 15, but it was reported that historical records stored in steel vaults had escaped. In Louisville the effort to carry out the law to redistrict the city was delayed by litigation; the site of a new Federal building on Broadway between Sixth and Seventh streets was selected. The city of Lexington installed a zoning and city planning commission, and petitions were circulated for a referendum vote on a proposal that the city should adopt government by city manager.

ELECTION. In the election of November 6, the voters of the State gave Hoover (Rep.), for President, 558,064 votes; Smith (Dem.) received 381,070; the Hoover plurality was much greater than that given President Coolidge in 1924. The

Democratic vote for President exceeded that of 1924, but the Republican total was more than 150,000 greater than it had been that year. The heavy vote was achieved in spite of the absence of any election of senator or governor. Republican candidates for the United States House of Representatives gained six seats and retained another three, only two Democrats being reelected.

OFFICERS. Governor, Flem D. Sampson; Lieutenant-Governor, James Breathitt, Jr.; Secretary of State, Ella Lewis; Attorney-General, J. W. Cammack; Auditor, Clell Coleman; State Treasurer, Emma Guy Cromwell; Commissioner of Agriculture, Labor, and Statistics, Newton Bright; Superintendent of Public Instruction, W. C. Bell.

JUDICIARY. Court of Appeals Judges: William Rogers Clay (Chief Justice), Gus Thomas, D. A. McCandless, R. P. Deitzman, M. M. Logan. William H. Reese, S. S. Willis.

KENTUCKY, UNIVERSITY OF. A coeducational State institution of higher education at Lexington, Ky., founded in 1868. The enrollment in the autumn of 1928 was 2456, distributed as follows: Graduate school, 131; arts and science, 1057; agriculture, 221; engineering, 487; law, 77; education, 254; commerce, 229. There were 1309 students registered in the summer session in 1928. The faculty numbered 237. The productive funds amounted to \$184,075, and the income for the year was \$1,364,573. The library contained 85,757 volumes. President, Frank LeRond McVey, Ph.D., LL.D.

KENYA COLONY AND PROTECTORATE (formerly the EAST AFRICA PROTECTORATE). A British colony and protectorate in East Africa lying on the Indian Ocean between the Umba and Juba rivers and extending inland as far as Uganda; a Crown colony and protectorate since 1920. Area, 225,100 square miles; population in 1926 estimated at 2,736,517, including 12,529 Europeans, 30,583 Asiatics, and 10,557 Arabs; Jubaland has about 16,000 inhabitants. Jubaland was acquired from Italy by the treaty signed between Italy and Great Britain July 15, 1924, and cession took place on July 29, 1925. Nairobi is the capital and has a population of 32,864 inhabitants, of whom 3612 are European. The largest town is Mombasa, with a population of about 39,824 of whom 869 are Europeans. In 1925 there were 20 government schools in operation including 6 European, and over 900 mission and native schools. The agricultural products include rice, coconuts, cotton, simsim, groundnuts, cassava, and sugar cane in the low lying areas. In the highlands where the temperature is moderate and the rainfall good, maize, wheat, sisal, and other crops of lesser importance are grown.

According to latest estimates the merchantable forest extends over 4500 square miles, of which 316 square miles are tropical. The mineral resources consist of natron, diatomite, gold, graphite, marble, limestone, and manganese. They are not fully explored as yet, and only gold mining is carried on to any extent. There is a uniform customs tariff in Kenya, Uganda, and Tanganyika. Imports into Kenya and Uganda in 1926 totaled \$7,440,649 and exports, \$7,844,681. The chief import is cotton piece goods and the chief export raw cotton. The budget estimates for 1927 were revenue, \$2,588,255; expenditure, \$2,570,064; customs revenue (1926), \$1,150,593. The tonnage of vessels entered and cleared in 1926

was 3,108,792 tons. The Kenya and Uganda Railway is the chief means of communication and is owned by the State. It operates 961 miles of main line and branches, as well as steamer service on Lakes Victoria and Kioga, and a motor transport service. The colony is governed under the constitution of December, 1925, which provides for an executive and legislative council. Governor and Commander-in-Chief in 1928, Lieut-Col. Sir Edward W. M. Grigg.

KENYON COLLEGE. A college of arts and sciences for young men at Gambier, Ohio; established in 1824 by the Protestant Episcopal Church and connected with it. The enrollment is limited to 250. The number registered for the autumn term of 1928 was 253; and the faculty numbered 24 members, including the following appointments made during the year: Charles Rutenber, Ph.D., assistant professor of physics; C. L. Cottrell, Ph.D., assistant professor of chemistry; Dwight Packard, A.M., instructor in English; and R. J. Kutler, A.M., athletic director. The endowment funds amounted to \$1,624,000 and the income for the year was \$208,000. The library contained 45,000 volumes. President, William F. Peirce, L.H.D., D.D., LL.D.

KEOGH, KÉ'Ō, MARTIN JEROME. American jurist, died at New Rochelle, N. Y., October 24. He was born at Waterford, Ireland, in 1855, and after university studies in Dublin, he moved to the United States. After graduating from the law school of the New York University in 1875, he commenced law practice in New Rochelle, and formed a partnership with Charles G. Banks. He was an able trial lawyer and acquired a reputation in criminal cases in Westchester County. He participated in politics only once, when in 1886 he acted as a Democratic elector, voting for Grover Cleveland. Judge Keogh was elected Justice of the Supreme Court of New York in 1895, from the Second Judicial District. His career on the bench was so successful, that when his fourteen-year term expired, the various bar associations in the counties and cities under the jurisdiction of his court petitioned for his return, and the Democratic and Republican conventions united on his renomination. Being reelected, he started his second term in 1910, one of the first judges to be supported by both parties, and he served until his retirement, Jan. 1, 1923. Judge Keogh was unwilling to become involved in politics, but he was interested in civic reform in Westchester County, and was instrumental in the organization of The People's Forum, and the Legal Aid Society. He was elected an honorary member of the Association of the Bar of the City of New York, in 1888, and he was awarded the LL.D. degree from Manhattan College in 1903, and from New York University in 1906.

KING, (WILLIAM BENJAMIN) BASIL. American novelist, died at Cambridge, Mass., June 22. He was born at Charlottetown, Prince Edward Island, Feb. 26, 1859, and he was educated at King's College, Windsor, N. S. He entered the ministry of the Protestant Episcopal Church, and was rector of parishes at Halifax, N. S., and Cambridge, Mass., before devoting himself exclusively to writing, from 1900. Although critics found Mr. King's stories imbued with too much optimism and too much given to the "happy ending," many of them attained great popularity. In his later years he paid much attention to the hypothesis of the survival of life after bodily death, and he embodied his theories in

some of his stories and in a motion picture which he wrote, "Earthbound." His books were: *Griselda* (1900); *Let Not Man Put Asunder* (1901); *In the Garden of Charity* (1903); *The Steps of Honor* (1904); *The Giant's Strength* (1907); *The Inner Shrine* (1909); *The Wild Olive* (1910); *The Street Called Straight* (1912); *The Way Home* (1913); *The Letter of the Contract* (1914); *The Side of the Angels* (1916); *The Lifted Veil* (1917); *The High Heart* (1917); *The City of Comrades* (1919); *The Abolishing of Death* (1919); *The Thread of Flame* (1920); *The Empty Sack* (1921); *The Conquest of Fear* (1921); *The Dust Flower* (1922); *The Discovery of God* (1922); *The Happy Isles* (1923); *The High Fort* (1925); *Faith and Success* (1925); *The Spreading Dawn* (1927).

KIRKWOOD, KIRKWOOD, JOSEPH EDWARD. American botanist and educator, died at Flathead Lake, Mont. August 16. Born at Cedar Rapids, Iowa, Jan. 24, 1872, he was graduated from Pacific University, Forest Grove, Ore., in 1898, and, after continuing his studies at Princeton he received the Ph.D. degree from Columbia in 1903. He became an instructor in botany at Syracuse University in 1901, associate professor in 1904, and in 1907 he was given the full professorship. He left Syracuse University in the same year to become assistant botanist of the Continental Mexican Rubber Company, and in the following year he became investigator for the Desert Botany Laboratory of the Carnegie Institution in Tucson, Ariz. In 1909 Dr. Kirkwood joined the University of Montana faculty as assistant professor of botany and forestry, and in 1910 he was made professor and head of the department. In 1914 he became professor of botany.

KIWANIS INTERNATIONAL. Clubs made up of not more than two of the leaders in each business and profession, united for the rendering of civic and social service to the community. Each club enjoys autonomy but at the same time functions in direct connection with district and international administrations. There are twenty-nine geographical districts, each with a governor, in the United States and Canada. The first club was organized at Detroit, Mich., in January, 1915. The first national president was George F. Hixon, elected in May, 1916, and elected international president in 1917, the organization having spread into Canada. The name "Kiwaniis" is a word coined to express the constructive, unselfish work of Kiwanians. The motto of the organization, "We Build," is also an expression of its spirit. Its aims are to crystallize community sentiment for municipal improvements, to cultivate public opinion for purer politics, and to promote community coöperation in all good things. The international organization at the close of the year 1928 was made up of more than 1750 clubs, with an approximate membership of 102,000. O. Samuel Cummings, Kansas City, Mo., was the international president for 1928-1929; Henry C. Heinz, Atlanta, Ga., was the immediate past president; Fred. C. W. Parker, secretary; and Raymond M. Crossman, treasurer. The International headquarters' office is in the Federal Reserve Bank Building, 164 West Jackson Boulevard, Chicago, Ill.

KLABUND. Pen name of the German author, ALFRED HENSCHKE, who died at Davos, Switzerland, August 13. He was born Nov. 4, 1891, at Krossen, and after studying at Berlin, Munich,

and Lausanne, he traveled continuously and wrote more than forty books, including: *Morgenrot* (1913); *Klabunds Karussell* (1914); *Moreau* (1915); *Dumpe Trommel und beraushtes Gong* (1916); *Die Himmelsleiter* (1916); *Mohammed* (1917); *Dreiklang* (1919); *Das Blumenschiff* (1921); *Franziskus* (1921); *Spuk* (1922); *Pjotr* (1923); *Das Heisse Herz* (1923); *Der Kreidekreis* (1924); *Gedichte* (1926); and *Cromwell* (1926).

KNIGHTS OF COLUMBUS. A fraternal society for Roman Catholic men, organized under a special charter granted by the General Assembly of the State of Connecticut, Mar. 29, 1882. The Order is composed of a Supreme Council, a Board of Directors, and State and subordinate councils. On June 30, 1928, there were 61 State councils and two territorial jurisdictions. The 2530 subordinate councils had a membership of 661,684, of whom 242,681 were insurance members and 419,003 associate members. These two classes developed through deviation from one of the chief purposes of the organization, to urge Roman Catholic men to insure provision after death for those dependent upon them, but expansion in membership permitted others to join the associate class with certain restrictions as to their rights. By the step-rate plan of insurance adopted in 1902, every insured member pays the cost of his own insurance at his own age. The four principles of the Order, charity, unity, fraternity, and patriotism, emphasize to members the necessity of rendering service in time of illness, death, or distress, the gathering together of men for better citizenship, the value of mutual assistance, and loyalty to duly authorized civil government.

The society continued to offer to ex-service men evening courses in academic, commercial, and trade or technical subjects, free of charge, and conducted correspondence courses for ex-service men and other members of the Order; its programme of boy-guidance work continued to receive support, as well as the two years' course in boy-guidance work at Notre Dame University, under the supervision of a chair in boy-guidance established at the University by the Order. Other activities included the establishment of Circles of Columbian Squires, the junior order, and the campaign of education inaugurated in 1926 against the influence of Soviet Russia upon the philosophy of American life, including the distribution of 4,000,000 pamphlets, which also contained information upon Mexico; and lectures concerning activities in Mexico, which were delivered throughout the United States.

The Order publishes monthly *Columbia*, a magazine devoted to up-to-date fiction, verse, editorials, articles on business, sport, arts, literature, sociology, religion, and the ordinary interests of the ordinary man, which had a circulation in 1928 of more than 700,000. The headquarters of the Supreme Council are located at New Haven, Conn., and the officers for 1928 were: Martin H. Carmody, supreme knight; John F. Martin, deputy supreme knight; William J. McGinley, secretary; D. J. Callahan, treasurer; Edw. F. Fahey, M.D., physician; Luke E. Hart, advocate; the Rt. Rev. John J. McGinney, chaplain; David F. Supple, warden.

KNUDSEN, KNUDSEN, GUNNAR. Leader of the Norwegian Radical party and premier during the World War, died at Oslo, December 1. He was born near Arendal, in September, 1848, and

attended the Royal Frederick University, receiving a degree in engineering in 1869. He first worked as an engineer in Norway and England, and in 1872 became proprietor of a shipping concern. He was elected to the Storting in 1892, later becoming president of that legislative assembly. Knudsen served as minister of finance under King Oscar II in 1901, 1903, and 1905. After the separation of Norway and Sweden in June, 1905, King Haakon VII appointed him premier in 1908, a position which the Radical leader held for two years, returning to office 1913-20. He was chairman of the Statens Videnskabelige Forskningsfond.

KODACOLOR. See PHOTOGRAPHY.

KOESSLER, KARL KONRAD. American physician, died at Chicago, Ill., February 13. He was born at Vienna, Nov. 6, 1879, and was educated at the Imperial University of Vienna and the University of Chicago. Before going to the United States, Dr. Koessler was an assistant in the medical clinic of the Vienna General Hospital, and also did research work at the Pasteur Institute and the Clinic Wida, both in Paris. He was assistant clinical professor of medicine at the Rush Medical School, University of Chicago, and professor of pathology at the Sprague Memorial Institute. He was credited with inventing the liver treatment for pernicious anemia, and in recent years had given much time to the study of asthma and of Bright's disease; he died of the last-named ailment. He wrote many medical books in both English and German and was a member of numerous medical societies.

KOMAROV, MARSHAL MORITZ VON AUFFENBERG. See AUFFENBERG-KOMAROV, M. VON.

KONGO, BELGIAN, AND CONGO FREE STATE. See CONGO.

KOREA or CHOSEN. A peninsula of eastern Asia belonging to the Japanese Empire since the treaty between Japan and Korea, Aug. 22, 1910. Capital, Seoul.

AREA AND POPULATION. The area is given at 85,241 square miles; population, according to the census figures of Jan. 1, 1925, 19,519,927, as compared with 17,288,989 in 1920. The foreigners number slightly more than 35,600, the vast majority of whom are Chinese. At the end of 1925 the largest cities with their populations were: Seoul, 302,711 (77,811 Japanese); Pusan, 103,522 (39,756 Japanese); and P'yong-Yang, 109,285 (22,527 Japanese).

EDUCATION. In 1925 there were for the education of the Japanese 449 elementary schools with 54,137 pupils, 10 middle schools with 4635 pupils, one medical school with 280 students, one technical high school with 118 students, 21 girls' high schools with 5694 pupils, one commercial high school with 246 students, one special school for law with 152 pupils, and various kindergartens and private schools. For the education of the Koreans there were 1244 common schools with 368,585 pupils, 78 private common schools with 17,102 pupils, 23 higher common schools with 9189 students, besides various industrial schools, and a medical and technical college. On Mar. 31, 1926, there were 1931 schools of all kinds in Korea with 474,203 pupils, and a university at Seoul with 321 students (89 Koreans and 232 Japanese).

PRODUCTION, ETC. From time immemorial tilling the soil has been the principal occupation of the Korean people, and rice is the staple agricultural product, followed by barley, Italian millet,

soy beans, wheat, and red beans. Methods of agriculture preclude the use of mechanical devices, and as the native horse is too small for farm labor, the Korean's main beast of burden is his ox or cow. These animals plow his fields, haul his heavy loads, turn his mill, and as a final service are slaughtered for food or for their hides. As a result of the encouragement given by the Government to the breeding of cattle and the measures taken to prevent cattle diseases, the number of cattle in Korea gradually had increased from 900,000 in 1910, at the time of the annexation to Japan, to over 1,580,000 in 1927. Of the 1927 total, 259,663 were slaughtered and 43,086 exported. In 1927 the rice crop amounted to 84,998,445 bushels, in the previous year the barley production was 35,410,630 bushels; agricultural products also included 21,757,685 bushels of soy beans, 157,489,981 pounds of Upland American cotton, and 57,149,756 pounds of native cotton.

The principal native industrial products of Korea are textile fabrics, paper, pottery, metal ware, manufactured tobacco, brewed drinks, and leather. These industries are mostly carried on as subsidiary house industries. The chief mineral products are gold, silver, zinc, copper, lead, iron, tungsten ore, graphite, coal, quartz, and kaolin.

COMMERCE. Korea's total trade with Japan and foreign countries in 1927 was valued at 742,341,709 yen, an increase of 7,217,126 over the 1926 figure. Exports totaled 358,925,000 yen and imports, 383,417,000, against 362,955,000 and 372,170,000, respectively in 1926. An excess of imports over exports of 24,492,000 yen, accordingly, was recorded in 1927 as compared with 9,215,000 yen in the preceding year. Korea's foreign trade has shown a gradual growth proportionate to its industrial development, increasing from a total of 316,378,000 yen in 1918 to 742,342,000 in 1927.

Trade with Japan represented 81 per cent of Korea's total trade in 1927, amounting to 600,265,000 yen—a decline of 13,853,000 from the 1926 figure. Compared with figures for the previous year, exports to Japan declined 7,384,000 yen, while imports from that country showed an increase of 21,237,000 yen. Trade with other countries than Japan amounted to 142,077,000 yen, representing less than 20 per cent of Korea's total foreign trade, and 6,636,000 yen below the 1926 figure. China holds first place both in the export and import trade of Korea with countries other than Japan.

FINANCE. The finances of Korea form a special account in the budget of Japan. The 1926-27 budget showed revenues of 192,824,974 yen and expenditures of 192,825,154. The budget for 1927-28 balanced at 210,910,111 yen. The public debt on Mar. 31, 1927, was 16,877,430 yen.

COMMUNICATIONS. The shipping entered at the open ports in 1926 had a tonnage of 5,801,322 and those that cleared a tonnage of 5,550,152. There were 1821 miles of railways in 1927, which handled 22,452,363 passengers.

GOVERNMENT. Korea is considered an integral part of Japanese territory and is so governed. Governor-General in 1928, General Hanzo Yamashita (appointed in December, 1927).

KRECH, ALVIN WILLIAM. American financier, died at New York, May 3. Born at Hannibal, Mo., May 25, 1858, he received there a public-school education. His first business experience was gained with the Holly Flour Mills, of Milwaukee,

Wis., with which he remained from 1874 to 1888. He then entered railroad contracting, 1888-92, and this led to his connection, 1893-94, with the Union Pacific R. R., in the period of its insolvency. He served as secretary of the reorganization committee and in New York. He left the railroad to become an official of the Mercantile Trust Company of New York, 1894-1903. In the latter year Mr. Krech was elected president of the Equitable Trust Company of New York and held that office until he became chairman of the board in 1923. He was a director of the American Ice Company, the City Investing Company, the Federal Sugar Refining Company, the Manhattan Railway Company, the Norfolk & Southern, the Western Maryland, the Wabash, the Denver & Rio Grande, and other railroad and industrial corporations. He was active in philanthropic movements in New York, especially as treasurer-general and director of the Permanent Blind Relief Fund. Mr. Krech was decorated by the French Government as a Chevalier of the Legion of Honor, by that of Italy as Commander of the Crown of Italy, and by Rumania as an Officer of the Order of the Rumanian Crown.

KU KLUX KLAN. The decline of the Ku-Klux Klan, spoken of in preceding YEAR BOOKS, became more marked in 1928 when it took on all the appearances of a fraternal order. In February it was reported that the Klan, through its Emperor and Imperial Wizard, had doffed the mask, dropped some of the secret ceremonies, and taken a new name, that of Knights of the Green Forest. The following conjectures were advanced by newspaper commentators for the action: A falling treasury; a desire to defeat Governor Smith in the Democratic convention; compulsion by State and municipalities which were prohibiting the use of masks in public gatherings. The Klan, said Imperial Wizard Dr. Hiram W. Evans, was preparing "for newer and larger activities in our national life." Some observers insisted that the Klan was still a political power and that it would make its influence felt in November, particularly if Governor Smith was to be the Democratic nominee. Thus Stanley Frost, writing in *World's Work*, while agreeing that its numbers had dwindled, insisted that as a political power its force was to be reckoned with. He was bold enough to say: "I believe that the Klan can prevent Smith's nomination. . . ." His estimates of Klan members appeared more plausible than his prophecies. Mr. Frost put Klan membership at one-third of the figure of 1924 when the movement was at its apogee. Indiana and Colorado, particularly, appear to have lost heavily.

There is no question that the Klan played a rôle of importance in the presidential campaign following the nomination of Governor Smith by the Democratic party. It was one of the forces of intolerance that opposed Governor Smith because of his Catholic faith. The rural areas of the South and the border States were deluged with printed material in which Catholicism was denounced and the Democratic candidate was declared to be the agent of the Vatican. What was to be the effect of the more or less subversive campaign waged against Governor Smith by the Ku Klux Klan and other agencies could not be estimated as the year closed.

The year, too, saw the first denunciation of the Klan from a Federal court bench (April 13). This was at the conclusion of the Pittsburgh

trial (see preceding YEAR BOOK) in which the Klan sought an injunction against five former members to prevent them from doing business under the Klan name. On the other hand the "banished members" had filed a counter suit asking for the revocation of the Klan charter, the appointment of a receiver, and the accounting of \$15,000,000 collected in membership dues. One of the highlights of the trial was the presentation of a deposition made by D. C. Stephanson, imprisoned in an Indiana jail but at one time the head of the Klan in his State. In this, Stephanson violently attacked the order and particularly the Imperial Wizard. Judge W. H. S. Thomson brought the trial to an end by dismissing the counteraction and by throwing out the Klan's suit for an injunction because "this unlawful organization, so destructive of the rights and liberties of the people, has come into court with filthy hands and can get no assistance here." The court continued:

That the plaintiff organization, through its actual operations and teachings, has stirred up racial and religious prejudices, fomented disorder and encouraged riots and unlawful assemblies, which have resulted in flagrant breaches of the peace, defiance of the law, bloodshed and loss of life, and that such unlawful assemblies and riots have, in many instances, been brought about for the avowed purpose on the part of the officers in control of increasing the membership of the organization.

More lurid disclosures were made public in Indiana in a deposition filed with the State's attorney-general who was seeking to oust the Klan from the State. The testimony was presented by a former Klan cyclops who told how the Klan had stuffed ballot-boxes, used whisky to win elections, raided men on the Order's blacklist, and boycotted Catholic and Jewish business men. Pennsylvania and Indiana, however, were the only States where the doings of the Klan received extended public attention. In other States the soft veil of obscurity appears to have dropped over the Order.

NEW YORK KLAN LAW. It will be recalled that in 1923 New York State passed a law requiring all organizations except trade unions and fraternal orders, to give publicity to their regulations, oaths, and memberships. This was aimed at the Klan and it was hoped that by the unmasking of the order its effectiveness would be terminated. On November 19, the U. S. Supreme Court found the law constitutional and affirmed the decision of the New York Court of Appeals when it found one George C. Bryant guilty of a misdemeanor for becoming a member of the Klan when he knew that it was violating the law. The Supreme Court opinion was written by Mr. Justice Van Devanter. The opinion agreed with the lower courts that the statute was justified in drawing a distinction between the Klan and labor organizations and fraternal orders. It quoted with approval one of the lower courts when it said: "It is a matter of common knowledge that this organization functions largely at night, its members disguised by hoods and gowns and doing things calculated to strike terror into the minds of the people." On the other hand, of the fraternal orders which were excluded, the lower court said: "These organizations and their purposes are well-known, many of them having been in existence for many years." The Supreme Court opinion then concluded: "We think it plain that the action of the courts below in holding that there was a real and

substantial basis for the distinction made between the two sets of associations or orders was right and should not be disturbed." See **INDIANA**.

KURDISTAN, kōōr'dē-stān'. A more or less vague term applied to a region in eastern Asia Minor comprising a portion of Turkey and the northern section of the vilayet of Mosul in the new independent state of Irak (See **MESOPOTAMIA**). The inhabitants are Kurds, a seminomadic people related to the Persians in race and language. The population is estimated at 2,500,000. Shortly after the World War there was an attempt to create an independent Kurdistan. The movement was completely crushed by the failure of the Treaty of Sèvres, after which the remaining Kurds divided in political allegiance to the Turkish, Persian, and Mesopotamian governments.

KWANGCHOW-WAN, kwāng'chō'wān. A small territory on the coast of the Chinese province of Kwangtung, leased to France in 1898, and two small islands commanding the bay leased to her the following year. Area, about 190 square miles; population estimated at 205,000. In 1925 the imports were valued at 6,735,239 piastres and the exports at 5,844,992 piastres. The chief imports are cotton yarns, opium, and petroleum; the chief exports, straw sacks, swine, and mats. The port is free and is regularly visited by two French steamship companies. In 1925, 296 vessels of 130,000 tons entered. The local budget for 1927 balanced at 660,000 piastres. The administration is under the governor-general of French Indo-China.

KWANTUNG, kwān'tung', or **KWANTAO**. A territory at the southern part of the Liaotung Peninsula, leased to Japan by China, as a successor to Russia after the Russo-Japanese War. Area, about 538 square miles; population, Dec. 1, 1925, 1,089,678, of whom 846,523 were Chinese. The latest statistics on education showed 52 elementary schools with 22,168 pupils for the instruction of Japanese, and 128 schools with 22,709 pupils for the instruction of natives. The agricultural products include rice, tobacco, hemp, and various grains and vegetables. The fishing industry is of importance. There is an abundance of salt which is the chief manufactured product. Trade is mainly with Japan and China. Imports in 1924 were valued at 115,039,766 haikwan taels and exports at 171,259,261 haikwan taels. The seat of the administration and the chief port is Dairen, formerly Dalny. The estimated revenue and expenditure for 1926-27 balanced at 14,997,515 yen. The territory is under a Japanese governor-general.

LABOR. The reader is recommended to the following articles for discussions of various aspects of the history of labor during the year: **CHILD LABOR**; **COÖPERATION**; **LABOR ARBITRATION AND CONCILIATION**; **LABOR LEGISLATION**; **MINIMUM WAGE**; **OLD-AGE PENSIONS**; **STRIKES AND LOCKOUTS**; **UNEMPLOYMENT**; **WOMEN IN INDUSTRY**; **WORKMEN'S COMPENSATION**; and in articles on the respective countries. The following notes indicate other developments during the year.

INJUNCTIONS. The issuance of injunctions by equity courts became an important question before the public. Labor, particularly, was moved to demand legislative relief because of the use to which courts were increasingly putting the Sherman Anti-Trust Act and the Clayton Act. As a result of these laws, courts in equity, on the ground that labor unions were combinations "in

restraint of trade" were granting injunctions to restrain the calling of strikes. That labor could expect no relief from the U. S. Supreme Court was shown in the decision handed down in April, 1927 in the Bedford Cut Stone Co. case (274 U. S. 37). The Bedford Cut Stone Co. had declared a lockout and refused to deal with the men's union, obtaining an injunction to prevent the union's interference with its business. This was granted by the local court and upheld by the Supreme Court on the ground that the Sherman Anti-Trust Law and the Clayton Law made such action compulsory.

A minority opinion was signed by Justices Holmes, Brandeis, and Stone. The refusal of the courts to consider the factor of reasonableness prompted Senator Shipstead to introduce a bill to provide that "equity courts shall have jurisdiction to protect property when there is no remedy at law," where property was defined to mean something "tangible and transferable." A sub-committee of the Senate Judiciary Committee, holding hearings in the spring of the year, reported a substitute bill which provides: 1. That the individual worker shall have "full freedom of association, self-organization, and designation of representatives of his own choosing to negotiate the terms and conditions of his employment, and that he shall be free from interference, restraint, or coercion of employers of labor, or their agents, in the designation of such representatives or in self-organization or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection"; 2. That the "yellow dog" contract is to be unenforceable; 3. That no court of the United States shall enjoin any person in a labor dispute from doing singly or together, among other things, the following: ceasing to perform work, becoming a member of a labor union, paying strike benefits, giving publicity to the existence of a labor dispute, assembling peaceably to act in promotion of his interests in a labor dispute; 4. That no injunction is to be issued except after notice, a hearing, and finding that unlawful acts have been committed with irreparable injury to the complainant's property and that the complainant has no adequate remedy at law; 5. That no injunction is to be granted unless the complainant has made efforts to arbitrate; 6. That the defendants charged with contempt in the violation of injunctions are to be allowed trials by jury. The sub-committee responsible for the bill was made up of Senators Norris, Blaine, and Walsh (Montana). No action was taken in the spring session.

At a meeting in Washington. in the spring, of 125 labor leaders, it was decided to support such legislative proposals as offered labor relief. In pointing out the peril in the present situation, Matthew Woll, vice president of the A. F. of L., said: "We have cause to feel alarmed over the increasing number and character of court injunctions. During the shopmen's strike in 1922 more than 300 applications for injunctions were made and granted. During the year 1927 more than 600 injunctions were issued against labor." Mr. Woll showed that labor was being enjoined by court decree from soliciting men and women to join unions, from peaceful picketing, from using its funds to meet the legitimate expenses incidental to the carrying on of a strike, from peaceful assemblage, from exercising the right of free speech, from using public

highways, from advertising the fact that a strike exists in which labor was directly interested.

In the presidential campaign in the fall, Governor Smith attacked the indiscriminate use of the injunction. In fact, the Democratic party platform said: "Injunctions should not be granted in labor disputes except upon proof of threatened irreparable injury, and after notice and hearing; and the injunction should be confined to those which do directly threaten irreparable injury." The Republican platform was more cautiously worded. It said: "We believe that injunctions in labor disputes have in some instances been abused and have given rise to a serious question for legislation."

In January, the New York State Court of Appeals ruled that the employees of the Interborough Rapid Transit Co. were not violating their contract with the company by joining the street railway employees' union secretly. The suit was based on an injunction that the company had sought against the union to prevent it from organizing the subway men who, as a condition of employment, had to affiliate with the company union. In March the same court refused to issue an injunction requested by the Interborough against William Green, president of the American Federation of Labor, to restrain union organizers from continuing their activities among the subway men. The company contended that the employees had signed a two-year contract one of whose clauses was that they were not to affiliate with the street railway employees' union while in the subway's employ. It was pointed out by the defendants that the contract was inequitable in that the subway had the right to discharge while the contract bound the men. With this view the court agreed and denied the plaintiff the injunction it requested to prevent the continued unionization of its men.

MEXICO. President-elect Emilio Portes Gil indicated that his administration was planning the radical revision of the country's labor code when he summoned a conference of workers and employers to meet with him and labor experts, beginning November 15. As outlined roughly by Señor Gil, the new code was to contain the following provisions: 1. The establishment of a system of labor courts. The scheme calls for the setting up of tribunals in the plants themselves, with courts of appeal and central arbitration boards. There would also be a National Labor Council of three representatives of workers, three of employers, one representative from each

labor court, one representative from each of the Ministries of Industry, Finance, Agriculture, and the National Department of Accountancy. This Council would have charge of obligatory arbitration disputes of a general nature and would arrange agricultural credits, regulate the general scale of salaries, promote industry through conferences, and the like. 2. A corps of labor inspectors is to be created. 3. The right to strike is recognized. 4. The working day is to be fixed at eight hours and the week at six days, with four annual holidays as obligatory and also obligatory annual vacations with pay. 5. The creation of a government insurance organization with contributions from the Government, the workers, and the employers. 6. All able-bodied Mexicans must learn trades and work at least one year in the country. 7. Seventy per cent of the workers of every factory must be Mexicans and only Spanish-speaking persons will be allowed to occupy the posts of managers, superintendents, doctors, and foremen. 8. Saloons and gambling houses are banned in labor centres. 9. A minimum wage is to be established. 10. Employers will have to obtain the consent of the labor court before closing their businesses. Workers are to receive a month's notice.

ENGLISH CONFERENCE ON INDUSTRIAL RELATIONS. Late in 1927, largely as a result of the initiative of Lord Melchett (Sir Alfred Mond) there was formed in England a Conference on Industrial Relations made up of some of the larger industrialists and a number of the more conservative labor leaders. By mid-summer some ten meetings of the group had been held and on July 5th a report was issued. The report recognized that the existing trade-union organizations were the most effective representatives of labor operating and approved of the practice current among employers to take up with trade-union organizations questions of wages, hours, and other working conditions. The report placed the following stamp of approval on trade-union organization: "We further consider that negotiations between employers and workman are facilitated by workmen being members of an affiliated union. . . ." The report went on record as condemning the dismissal of workers for trade-union activities. Another significant recommendation was the creation of a National Industrial Council made up of representatives of the Trade Unions Congress and the employers' associations for the purpose of: holding regular meetings to consider the state of industrial pro-

PRODUCTION OF SELECTED COMMODITIES PER MAN-HOUR IN THE UNION OF SOCIALIST SOVIET REPUBLICS FROM OCTOBER 1, 1925, TO APRIL 30, 1927
[As used here, Russian ton = 2232 pounds; United States ton = 2000 pounds, long ton = 2240 pounds; case = 1000 small boxes; center = 220.46 pounds; cubic meter = 35,314 cubic feet]

Commodity	Total man-days worked (thousands)	Average hours worked per day	Production, in Russian measure			Production, in United States measure				
			Unit	Amount	Per man-hour	Unit	Amount	Per man-hour	Per man-day	
Coal	80,974	7.4	Ton	42,926,000	0.072	Ton	47,905,416	0.080	0.59	
Mineral oil	17,609	7.9	do	21,206,932	.152	do	28,666,936	.170	1.34	
Salt	2,625	7.5	do	2,254,051	.114	do	2,515,521	.128	.96	
Cement	7,690	7.5	do	2,136,475	.037	do	2,384,306	.041	.31	
Pig iron and steel										
Ingots	79,960	7.7	do	8,912,015	.014	Long ton	8,880,186	.014	.11	
Matches	6,282	7.5	Case	6,643,900	.141	Gross, boxes	46,138,194	.979	7.34	
Vegetable oils	4,072	7.6	Centner	3,856,644	.125	Hundred weight	8,502,357	.275	2.09	
Beet sugar	8,374	7.6	Ton	858,815	.013	Ton	958,438	.015	.11	
Lumber	17,925	7.6	Cubic meter	9,847,407	.072	Board-feet	4,173,015,970	30,632	232.80	
Paper and cardboard	18,002	7.7	Ton	443,943	.004	Ton	495,440	.005	.04	

ress; to perfect a machinery for the setting up of conciliation boards; to set up a machinery for the conduct of continuous investigation into industrial problems. With regard to a policy on conciliation, the Conference went on record as opposing Compulsory arbitration. The Trade Unions Congress accepted the report and approved the continuance of the sittings though the left elements, who all along had opposed the meetings, sought to pass a resolution condemning the Conference. On September 6, at its annual meeting, the Trade Unions Congress by a vote of 3,075,000 to 566,000 decided to approve the continuance of the peace-in-industry movement or "Mondism."

LABOR PRODUCTIVITY IN RUSSIA. Previous issues of the YEAR BOOK have contained comments on the productivity of labor in the United States. The accompanying table shows the productivity of labor in Russia for a selected list of basic industries. The figures are for man-hours and production per man-hour for both Russia and the United States. It will be observed that production per man-hour is greater for the American worker in the following industries: coal, mineral oil, salt, cement, beet sugar, paper, and cardboard, in fact in all those industries in which the units of measurement are comparable. Only in pig iron does the Russian worker produce as much as the American worker. However, in no case is there any really marked difference, and when one considers the remarkable superiority of American machinery the wonder is that the Russian worker can do as well as he does.

LABOR, AMERICAN FEDERATION OF. The American Federation of Labor held its forty-eighth annual convention at New Orleans November 19-28. The executive committee's report showed a gain in membership over the year of 85,537, its dues-paying membership on Aug. 31, 1928 being 2,896,063 as compared with 2,810,526 in 1927 and 2,803,966 in 1926. The Federation high mark was reached in 1920 when its membership totaled 4,078,740. The executive committee announced that in the forthcoming year organized labor would strive to double its membership, paying particular attention to the automotive field which so far had successfully resisted all efforts at unionization. The report further asked the convention to indorse an amendment to the immigration law for the restriction of immigrants from Mexico, Central America, and South America, called upon President Green to appoint a commission to examine the status of adult educational movement, and spoke of progress being made in the attainment of the five-day week.

The report continued to breathe defiance toward the Communists. The convention itself heard addresses on the menace of those manufacturers who continued to regard organized labor as un-American, on the desirability of a universal draft in the event of war, on the Hoover scheme for a prosperity reserve fund to be used in public construction works during periods of unemployment, on why labor will not form a political party, on a shorter working day for labor, on the danger being presented to labor by unrestricted immigration from Mexico, and the like.

On November 23 Secretary of Labor Davis declared before the convention that "the long work day and the long work week in American industry are as dead as the dodo," and tried to dissipate the dread that labor was beginning to express about the too rapid mechanization of

industry. President Green indicated that the Federation's chief preoccupations continued to be a shorter working week and more pay, when he issued a statement in which he said: "Two major trends for which labor is responsible for watching are that hours of work be increasingly shortened in order that mechanical progress may raise standards of human welfare, and that wage increases shall correspond to increasing productivity."

President Green made the statement that already 514 local unions and 165,029 trade unionists were working a five-day week of forty hours. That labor was going to stand back of a high tariff wall was indicated when it was reported that President Green had given his approval to the formation of the American Wage-Earner's Protective Conference. This body, said to represent 250,000 trade unionists, issued a statement in which it called upon President-elect Hoover to summon a special session of Congress for the further revision of the tariff law upward. Matthew Woll, vice president of the A. F. of L., was elected president of the conference. Seventeen international unions were affiliated with the conference. Listening to the demands for the further restriction of alien labor that came from a variety of international unions including the maintenance-of-way union and the seaman's union, the convention passed a resolution calling for more rigid restrictions, took issue with the Supreme Court's ruling that Canadian workmen had a right to cross the frontier daily to work in American plants, and recommended that the executive council make a thorough study of the immigration question in order to propose further legislation that will "safeguard and promote the economic, industrial, social, and political well-being of all the people in the United States in general and of the wage earners in particular."

One storm cloud did break to disrupt the fair harmony of the proceedings, and this was in the debate on the status of the Brookwood Labor College. At its August meeting the executive council of the Federation had called upon trade unionists to withdraw their support from the college because it was teaching communist doctrines. Interestingly enough, it transpired that this action had been taken without giving the board of trustees of Brookwood a chance to be heard. The subject came before the convention on November 27, and was brought up in the discussion of a resolution asking for the creation of a national labor college. Brookwood College was attacked because its faculty taught communist doctrines, because it celebrated May first as labor day instead of the American holiday in September, and because pictures of Marx, Lenin, and Trotsky were decorated on the anniversary of the founding of the soviets. On the other hand, the college was defended by graduates who pointed out that as a school it was natural that all doctrines be discussed.

The whole debate became rather ridiculous when an attack was launched on Professor John Dewey because he was writing a series of favorable impressions of Soviet Russia for the *New Republic*. The convention went so far as to expunge from its records a tribute that had been made to the educator by its committee on education. On the last day of its sittings, the convention by resolution formally approved the action of the executive committee in issuing a ban

against Brookwood College. Though there was opposition from the floor on the call for a vote, only one dissenting vote was recorded.

Other resolutions passed by the convention were the following: relief from the abuse of injunctions through a better definition of the jurisdiction of the equity courts, though the substitute for the Shipstead Bill was opposed; approval of the Kellogg anti-war treaties; approval of the Boulder Dam project; opposition to the efforts of public utility corporations and real estate boards to "inject covert propaganda into the public schools and universities." All the officers of the Federation were reelected and the convention selected W. T. Rooney of the sheet metal workers and W. P. Clark of the glass workers as fraternal delegates to the British Trade Union Congress. J. B. Haggerty was chosen the delegate to the Canadian Trades Conference. Toronto was chosen to be the seat of the 1930 convention. See also UNEMPLOYMENT, TRADE UNIONISM, LABOR.

LABOR ARBITRATION AND CONCILIATION. In the United States excellent work was being done by the Federal Conciliation Service in the prevention of industrial disputes. In the annual report of the Secretary of Labor for the fiscal year 1927-28, there is to be found a complete record of the activities of the service. During the fiscal year ending June 30, 1928, 478 industrial disputes were handled by members of the Service: of this number 307 were settled by the commissioners; 53 cases were pending at the end of the year; 57 cases were not adjusted; and 61 cases were reported as unclassified. The department reported that these industrial disputes directly affected 205,151 workers and also had an indirect effect on another 146,877.

Some of the more important cases in which the Service played a leading rôle were the following: At *Larkspur, Pa.*, the conciliators settled a strike that involved 3000 anthracite coal miners and that threatened to bring an additional 20,000 miners into the dispute. The difference was over salaries. At *Bridgeport, Conn.*, the conciliators played an important part in the settlement of a carpenters strike in which 900 men were involved. Differences were due to a demand for a five-day week and an increase in pay of one dollar per day. A compromise was effected on the salary question and the other matter was put in abeyance. The strike had lasted from June 1 to July 5. A threatened strike of the telephone operators of *Staunton, Ill.* was averted through the work of one of the Service's conciliators. In November, 1927, a strike seemed imminent as the result of the discharge of two operators, but the good offices of the Service's representative resulted in the signing of an agreement covering general working conditions.

In the strike of the hosiery workers of the Allen-A Knitting Co. of *Kenosha, Wis.*, where some 1200 workers were employed, 300 organized knitters were locked out because of their refusal to operate two machines. The factory was picketed, non-union help was employed, the company obtained an injunction against the strikers which a jury trial refused to sustain, and feeling ran very high. A conciliator who had been on the spot from February 15 to March 1 withdrew because of the hostility of the two groups. He was recalled in May when it was reported that the company was willing to accept an open-shop arrangement. The conciliator found, however, that this meant the continued employ of the strike-

breakers to the total exclusion of the locked-out workers. At the end of the fiscal year the strike had not yet been settled.

In February 500 textile workers, members of the union, went on strike in the Parker Mills of *Warren, R. I.* because of an increase in hours from forty-eight to fifty-four and a wage cut of 10 per cent. This latter was due to the fact that the owners of the mills had similar plants in New Bedford where similar wage cuts had been put into effect. After the strike had been going on for three months, a conciliator was called in. As a result of this mediation, the following agreement was accepted: the strikers were to return on the conditions of their previous employment, but some adjustment was to be effected with regard to the wage cut. At the end of a two weeks' study it was found that changes in almost all the departments outside of the weave shop would make it possible to save the company at least 10 per cent on the production cost without necessitating a wage cut.

AMERICAN BAR ASSOCIATION. This organization, through the chairman of its committee on commerce, Julius Henry Cohen, announced in February that it was at work on the perfection of machinery for the elimination of industrial disputes. The plan, in brief, called for the passage of legislation by Congress providing for the settlement of industrial disputes "which are within the purview of Federal jurisdiction." The method to be employed was through contracts between employers and trade unions for the "adjustment of their relations through negotiation and arbitration" and that once such contracts were entered upon they were to be held binding. The plan went on to say further: "Parties cannot complain if contracts which they have entered into are declared binding and enforceable." Nothing, however, was heard of the plan during 1928.

AMERICAN RAILWAY EXPRESS. On October 22, U. S. Department of Labor mediators successfully averted a strike by American Railway Express employees that would have thrown 55,000 men out of work. On October 9 and 10 a number of the members of the Brotherhood of Railway and Steamship Clerks had indulged in an outlaw strike in New York City and the situation had taken on serious aspects when one of the officials of the American Railway Express demanded the names of the persons participating in the walk-out. This union officials had refused to grant. Mediation resulted in the rescinding of the strike call and the recognition of the union. The strike threatened to be serious in view of the fact that a large part of the food supplies of New York City were handled by the American Railway Express and the city never had more than a three-day surplus on hand.

WESTERN RAILROADS. On October 30, an emergency board headed by James R. Garfield reported to President Coolidge that the decision of the Railroad Board of Mediation was a just one and by so doing it underwrote proposed wage increases. This action headed off a strike of 66,000 employees of western railroads and for the first time in two years put the wages of men on the western roads on a level with those prevailing in the east and southeast. The permanent Mediation Board had placed before the trainmen three propositions from which they were to choose one. This the emergency board approved. The three propositions were the following: 1. An increase of 6½ per cent with no change in

working rules. 2. An increase of $7\frac{1}{2}$ per cent and the elimination of the rules against "double-heading." (The unions had certain rules against the use of double locomotives because this reduced the size of train crews.) 3. An increase of $7\frac{1}{2}$ per cent and the submission of a number of the working rules of the men to arbitration. The acceptance of any one of these propositions made the wage increase retroactive to May 1, 1928. It should be said that propositions No. 1 and No. 2 had been offered by the railroads, but that the men had insisted upon a $7\frac{1}{2}$ per cent increase without the abandonment of their working rules.

INDUSTRIAL COURT OF GREAT BRITAIN. This court, which was established in 1919, appeared to have had a successful history in the nine years of operation. The court, which is under the Minister of Labor, has no original jurisdiction but sits on cases only when they are referred by the Labor Minister, and he in turn must wait for the consent of both parties to the dispute. The Industrial Courts Act provides that the parties to an industrial dispute may seek arbitration through the Labor Minister, who, with their consent, has the privilege of referring the matter to one of three agencies—the industrial court, to one or more arbitrators, or to a board of arbitration made up of representatives of the employer, the workers, and an impartial chairman. The Industrial Court has received recognition as an arbitral agency in that a number of trade agreements between employers and trade unions name it as the arbitrator in the event of a labor dispute. The court handles the following types of disputes: basic wages, bonuses, overtime, night work, Sunday work, hours of work, leaves, etc. The court's procedure is of the simplest nature. Oaths are not required, laws of evidence are not strictly observed, and the like. Though the court has no means of enforcing its decisions, it has met with success in that both parties as a rule bind themselves to its findings. Out of a total of 1354 decisions handed down, only four were contested by one of the parties involved. There can be no appeal from the court's findings.

OTHER FOREIGN NOTES. In the spring *Poland* provided for the creation of industrial courts in former Austrian and Russian Poland, Prussian Poland already having such courts. The courts were to have jurisdiction in all matters involving disputes between employers and their workers and would pass on such matters as hours of work, holidays, work of women and children, etc., but their jurisdiction would not extend beyond disputes involving more than 5000 zloty. The president and the vice president of the court were to be appointed by the Minister of Justice. Each court was to be made up of a president, one representative of the employers selected from a special panel made up of employer association representatives and one labor representative chosen from a panel similarly constituted. There was to be no appeal in cases involving less than 200 zloty. Where the sum was greater appeal might be taken to the court of appeal which is to have final jurisdiction.

In 1926 there was established in *Germany* a system of labor courts for the purpose of passing on claims for damages of workers against employers or vice versa. In such suits neither side is permitted to engage counsel. In *Wirttemberg* 26 such courts were set up in July, 1927. From

that time until the end of the year, these courts were called upon to pass on 2778 cases. The sums involved appear to have been quite small. It is interesting to note that the length of time for settlement was less than one month in more than one-half of the cases.

In May the *Swedish* Parliament passed a law creating a labor court whose function it would be to arbitrate compulsorily all trade disputes arising out of collective agreements. The law prohibits strikes and lockouts during the life of such agreements. No appeals may be taken from the decisions of the court.

It will be recalled that by the *Italian* Labor Code passed in December, 1925, Fascist syndicates were established by which wage agreements were given the force of law, strikes and lockouts were outlawed, and a labor court was established for the adjudication of trade disputes. The first important decision of the labor court under the new code was promulgated early in the year when shipowners sought a general reduction in seamen's wages on the ground of a decline in the cost of living and a falling off in earnings in the industry. The men opposed the reduction on the grounds that they were still receiving less than British seamen and in this they were upheld by the labor court which ruled that wages were to remain the same until June, 1928, when they were to be subjected to review and that such reviews were to be taken every six months.

Late in 1927 there was established in *Mexico* a Federal Board of Arbitration and Conciliation for the settlement of disputes involving the Government or which affect persons in two or more States, as well as labor controversies in the following industries: mining, oil, textiles, and transportation and communications. The board was to be composed of an equal number of workers and employers as well as a nonpartisan member appointed by the Labor Ministry.

LABOR BANKS. See COOPERATION.

LABOR LEGISLATION. In 1928, the legislatures of nine States, two insular possessions, and the Federal Congress held regular sessions. In addition, some States held special sessions. Notable among new laws were the District of Columbia's Workmen's Compensation Act and the Child Labor Law; reenacted Porto-Rican workmen's compensation law; the Louisiana law regulating private employment agencies; the creation, in Massachusetts, of a public bequest commission and fund to aid aged citizens and of a Children's Bureau in Kentucky. Three States liberalized workmen's compensation laws. Two investigations of unemployment, by the Federal Government, were authorized. In New Jersey, important amendments were made to the law regulating private employment agencies.

Arkansas. (Special Session.) No labor legislation reported.

California. No labor legislation reported.

Illinois. (Special Session.) Levy of tax in certain cities for policemen's annuity fund regulated; tax for mothers' pension fund in certain countries, and for policemen's pension fund in certain cities, lowered.

Iowa. (Special Session.) No labor legislation.

Kentucky. Exhaust systems for polishing and grinding machinery required and regulated; law regulating certain mine engines repealed and reenacted; law entitles parents to sue for loss of child's wages; commission created to investigate workmen's compensation act; State teachers' retirement system established; law and amendments to existing law and code regarding policemen's and firemen's pensions enacted; Child Welfare Commission abolished and Kentucky Children's Bureau established instead, the duties of which include control and supervision of the administration of moth-

ers' aid, investigation of the needs of Kentucky children, and assistance in establishing county children's bureaus which are to administer mothers' aid and assist the children's bureau; appropriation for department of agriculture, labor and statistics and for infancy, maternity and child health raised.

Louisiana. Police juries enabled to make regulations for needy; law enacted providing for wage assignment for collection; laws enacted regulating payment of wages and exemption of certain wages from garnishment; mechanics' lien law enacted; amendment of labor unions' charters provided for; closing regulations for certain filling stations forbidden; law regulating private employment agencies enacted; law specifying requirements for mechanics employed on public works amended; workmen's compensation law amended; state board for blind created; certain firemen made eligible to pensions; retention of money collected from employees for physicians' fees regulated; commissioner of labor required to file financial statements.

Massachusetts. Commission appointed to study revision of license fees; law regulating payment of teachers' salaries amended; workmen's compensation law amended; limitation of amount on retirement systems' deposits removed; public bequest commission and fund created to aid aged citizens; provisions of State retirement law dealing with retirement for permanent disability amended; law providing for group life insurance amended.

Mississippi. Mechanics' lien law amended; contracts with employed laborers forbidden; study of teachers' retirement legislation directed; state commission for blind created. No labor legislation reported for special session.

New Jersey. Penalty and procedure for prosecuting violations of law requiring payment of wages every two weeks in lawful money changed; six-day law made applicable to certain policemen; amendments to law regulating private employment agencies include changes in procedure of prosecuting violations and provisions that applicants for licenses in addition to existing requirements including proof of good moral character, must also furnish proof of citizenship of the United States, that existing agencies are inadequate and premises for proposed agency suitable; grade requirement for age and schooling certificates raised; workmen's compensation law amended; vocational rehabilitation law extended and number of members on state rehabilitation commission increased; retirement law amended; group insurance for employees is authorized.

New York. Law regulating labor liens on public works amended; women pharmacists exempted from hour regulations; important changes in child labor law include provision that children under fourteen are not to engage in any occupation carried on for pecuniary gain; definition of "fireproof partition" amended; workmen's compensation law amended; joint legislative committee for study of aged poor continued with a doubled appropriation; state retirement law amended and extended to include many state employees; a violation of any rule or order of the department of labor made a misdemeanor; financial statements required of department heads; 1920 law creating commission to study child labor laws repealed; joint legislative committee for study of labor law administration continued and directed to cooperate with the commissioner appointed to investigate the department of labor.

North Dakota. (Special Session.) No laws enacted.

Porto Rico. Investigation of method of adapting Florida and North Carolina tobacco industry to Porto Rico authorized in order to combat unemployment; law requiring dispensaries in certain factories amended; workmen's compensation law repealed and reenacted; retirement law amended and pension fund for teachers created; system of local municipal governments created.

Rhode Island. Certain Sunday performances authorized; laws prohibiting night labor of children, specifying hours for women and children, and regulating employment of minors in street trades amended; law providing for care of dependent children amended; boiler inspection law amended and promulgation of more stringent boiler inspection rules urged; workmen's compensation law amended; investigation of old-age pensions directed; salary of deputy commissioner of labor raised.

South Carolina. Certain labor liens provided for.

Virginia. Assignment of certain workmen's wages prohibited; mechanics' lien law amended; workmen's compensation law amended; commissioner of labor's term of office lengthened.

Wisconsin. (Special Session.) No labor legislation reported.

United States. Secretary of Labor and Senate committee on education and labor directed to investigate unemployment; extra compensation for night work for postal employees provided for; certain salaries raised and salaries of customs employees classified; investigation of labor conditions in certain coal fields directed; detailed child labor law for District of Columbia enacted, the provisions of which include the exclusion of children under fourteen from gainful occupation, the

limitation of hours of minors under eighteen to eight a day or forty-eight a week and six days a week, and the prohibition of girls under eighteen and boys under sixteen from work between 7 P. M. and 7 A. M.; longshoremen's workmen's compensation act applied to private employees in the District of Columbia; sick leave for postal employees extended; \$100,000 added to bureau of labor statistics' budget for 1929; any action for death or injury sustained within a national park or other place subject to the exclusive jurisdiction of the United States within the exterior boundaries of any State, shall be governed by the laws of that State.

See WORKMEN'S COMPENSATION.

LABOR LEGISLATION, AMERICAN ASSOCIATION FOR. Founded in 1906, this membership organization of socially minded economists, lawyers, journalists, labor leaders, and employers had worked along scientific lines, fearlessly attacking needless industrial evils from the general welfare viewpoint. It continues its work as the American arm of the International Association for Social Progress formed by the fusion of the three international organizations for labor legislation, unemployment, and social insurance. See SOCIAL PROGRESS, INTERNATIONAL ASSOCIATION FOR.

Progress of the Association was recorded in its substantial quarterly, *American Labor Legislation Review*, the December, 1929, issue of which contained a convenient annual summary and index of all new labor laws enacted in the United States. One of the most important activities of the Association during 1928, resulted in the application of the Federal Longshoremen's and Harbor Workers' Compensation Act to private employees in the District of Columbia, which was approved on May 17, 1928. Other activities in the line of workmen's compensation resulted, in New Jersey, in raising the weekly maximum from \$17 to \$20 and the minimum from \$8 to \$10 and, in New York, in permitting the State fund to carry insurance under the Federal Longshoremen's Act.

The campaign in which the Association had been energetic for several years for rock-dusting coal mines to prevent great coal dust explosions resulted in encouraging increase in the number of coal companies which had voluntarily adopted rock-dusting. At the beginning of the Association's special campaign five years previously, only three mines could be discovered that had employed rock-dusting. At the close of 1928, the number of coal companies (many of them operating several mines each) which were officially on record as employing this means of preventing explosions had grown to 296.

Measures which the Association sponsored were adopted in several States and in Porto Rico. Of primary importance were amendments to the New Jersey law regulating private employment agencies, approved July 14, which require that applicants for a license to carry on an employment agency furnish proof of the need for the proposed agency, in addition to the existing requirements of suitability of premises and proof of good moral character. Other measures sponsored by the Association and adopted in some States were the establishment of old-age pensions and broadening of old-age pension laws, the strengthening of hour regulations and mine safety laws, and measures for the mitigation of unemployment.

The twenty-second annual meeting was in Chicago, Dec. 26-28, 1928, several sessions being held jointly with the American Statistical Association, the American Economic Association, the American Sociological Society, and the National

Community Center Association. The chief subjects of discussion were the newer developments of labor-law administration, unemployment as a problem of industry, problems of unemployment—unemployment insurance, public work as a prosperity reserve and the need for an adequate public employment service—social costs of accidents, illness, and old age, and the new industrial South. Among the speakers were: Sam A. Lewisoht, Sumner H. Slichter, Leo Wolman, John B. Andrews, Frank Dickinson, Mollie Ray Carrol, Thomas I. Parkinson, W. H. Cameron, Niles Carpenter, and Murray Latimer. The president in 1928 was Sam A. Lewisoht; the secretary, John B. Andrews. Headquarters were at 131 East 23rd Street, New York City. See LABOR LEGISLATION.

LABRADOR. A large peninsula in British North America, forming the easternmost part of the North American Continent; lying between the Atlantic Ocean and Hudson Bay. It includes the northeast portion of the Province of Quebec in Canada and a small strip along the northeast coast dependent upon Newfoundland. In 1927 the dispute which had raged for twenty-five years between Newfoundland and Quebec over the ownership of the interior of Labrador was settled by the Privy Council. The decision gave the entire watershed of Labrador which drained into the Atlantic Ocean to Newfoundland. Consult preceding YEAR BOOK under NEWFOUNDLAND. The population of Labrador in 1926 was 3977.

LABUAN. A small island off the northeastern coast of Borneo, included in the settlement of Singapore after Jan. 1, 1907. Area, 30 square miles; population, in 1926, 5641, mostly Malays from Borneo. Capital, Victoria, with a population of 1500. Revenue, 1926, \$153,355, expenditure, \$144,354; trade, \$6,250,000.

LACHMUND, CARL. An American pianist, died in Yonkers, N. Y., February 20. He was born in Booneville, Missouri, March 27, 1857. After studying at the Cologne Conservatory, where he was graduated in 1875, he continued his studies at Berlin under Kiel, Moszkowski, and Ph. Scharwenka. From 1881-84 he had the fortune of being one of the last personal pupils of Liszt. He made his first tour of the United States in 1880 and a second tour in 1887, after which he settled in New York, where he established his own conservatory. In 1896 he organized the Women's String Orchestra, which he conducted till 1908.

LACROSSE. Johns Hopkins University developed the strongest lacrosse twelve in the United States in 1928, triumphing over U. S. Naval Academy, U. S. Military Academy, University of Maryland, Rutgers, and the Mount Washington Club of Baltimore in the play-offs to decide which team should represent the United States in the international contests scheduled for Amsterdam, Holland. These contests were not a part of the Olympic Games (q.v.), however. Johns Hopkins met Canada and Great Britain, the result being a three-cornered tie, each team losing one game.

LADAK. See ALFALFA.

LAFAYETTE COLLEGE. An institution for the higher education of men at Easton, Pa., founded in 1826. The registration in September 1928 was 1076, and it was the policy of the trustees to restrict the enrollment to approximately 100. The faculty numbered 95. The productive funds amounted to \$2,800,000 on July 1,

1928, and the income for the previous year was \$500,000. The number of volumes in the library was 71,000, accessions for the year being 3240. In addition to approximately \$100,000 received as gifts during the year 1927-28, a gift of \$500,000 from John Markle for a mining engineering building and its endowment, and a gift of \$200,000 from Fred M. Kirby for a building for the department of government, were received. William Mather Lewis, A.M., LL.D., president.

LAMB, FREDERICK STYMETZ. American artist and city planner, died at Fort Bragg, Calif., July 9. He was born at New York, June 24, 1863. He studied at the Art Students' League, New York, under Sartain and Beckwith, and at the Beaux-Arts, Paris, under Lefebvre and Boulanger, and modeling under M. Millet. He became a member of the National Sculpture Society and of the National Society of Mural Painters and was chosen secretary of the National Arts Club. He was noted as a mural painter and designer of stained glass and also as a lecturer and writer on civic art and the improvement of the appearance of cities and towns. In these pursuits he was associated with his brother, Charles Rollinson Lamb. Public attention was first directed to Frederick S. Lamb as an artist of more than usual ability when he received honorable mention at the World's Exposition in Chicago in 1893. He received a gold medal at the Atlanta Exposition of 1895 and another at the Paris Exposition of 1900. He was a former president of the Architectural League of America, a former vice president of the Architectural League of New York, and a trustee of the American Scenic and Historic Preservation Society.

LANDS. PUBLIC. According to the report of the Secretary of the Interior for the fiscal year ended June 30, 1928, there were about 194,000,000 acres of unappropriated public land in the United States, exclusive of Alaska, this being an area slightly larger than that of New England and the Middle Atlantic States. During the fiscal year 1928, original entry was made and allowed on 3,726,421 acres of public and Indian lands as compared with 3,594,838 acres in 1927. Patents covering 2,477,867 acres were issued, including 8760 homestead entries involving 1,927,869 acres, and 206 stone and timber entries. Five new stock driveways covering 29,962 acres were created, and 29 modifications after investigation released 7031 acres from such driveways. Two town sites and 688 lot purchases were passed to patent, and 2278 contested cases were adjudicated. Restorations from power-site withdrawals and classifications numbered 62, and applications under the desert-land law were 3376, of which 719 were approved and 608 canceled.

Under the Carey Act, 639.33 acres were patented, 128,387.04 acres were canceled, which, with other actions, left a total area of 766,732.08 segregated and unpatented acres. Of the swamp land applications 46,069.76 acres were patented, and 65,543 acres canceled. Adjustment of eleven railroad grants was completed, 85,729.79 acres were certified or patented, and 44,840 acres of selections rejected under the railroad and wagon-road listings and selections. Of the 731 applications for leases considered, two permits and 40 leases were granted, and 85 potash permits covering 157,307.83 acres, and 14 sodium permits covering 21,421 acres were issued. Two coal entries covering 357.18 acres were approved for patent, 83 coal prospecting permits covering

100,468.63 acres, 37 coal leases covering 9,126.05 acres, eight coal licenses covering 320 acres, and three coal permits covering 100,468.63 acres were issued.

Total cash receipts for the fiscal year were \$6,710,454.84. \$515,687.83 coming from the Indian lands, and \$6,194,767.01 from the public lands. Of this \$4,677,277.16 were from bonuses, rentals, and royalties from the leasing of mineral rights on the public domain. The total receipts were distributed as follows: General fund, \$1,290,895.09; public-land States, \$1,845,742.48; Indian tribes, \$461,854.29; reclamation fund, \$3,111,962.98; and do not include \$67,293.88 from various miscellaneous sources. Total expenditures of the Land Office were \$2,190,197.57, \$430,000 of which was for field inspection work, where seven division inspectors and an average of 72 inspectors were employed. For surveys and resurveys, \$800,000 was appropriated, and a total number of 1,571,917 aggregate acres were surveyed and 1,365,771 aggregate acres were resurveyed during the fiscal year. These were large and small investigations including a section of the Coolidge Dam area in Arizona, original surveys and resurveys of land deemed valuable for oil, and the continuation of the surveys in cooperation with other Government departments.

In regard to the act of July 3, 1926, with reference to leasing lands in Alaska for fur farming, an amendment of Jan. 30, 1928, permitted leases to cover an entire island provided it contained not more than 30 square miles. Leases to towns and cities of land for airports were made under the law of May 25, 1928, which limited such fields to 640 contiguous acres, permitted all government departments or agencies operating aircraft to have unrestricted use of such airports, and allow the Government to assume control if necessary for military purposes. On June 30, 1928, there were 151 National forests with an area of 184,403,819 acres, as compared to 183,938,106 acres on June 30, 1927, and of this a little over 86 per cent was public land. Owing to the increasing use of public lands for stock grazing, it was recommended that more adequate control of the use of these lands be made in order to secure equal use for all and to prevent the destruction of forage growth because of overuse.

LANSING, ROBERT. American lawyer and secretary of state in President Wilson's cabinet during the World War, died at Washington, D. C., October 30. He was born at Watertown, N. Y., Oct. 17, 1864, and was graduated from Amherst College in 1886. Having studied law with his father, he was admitted to the bar in 1889, and after a year in Europe, he commenced practice at Watertown as a member of the firm, Lansing & Lansing, which continued until his father's death in 1907. Lansing married, in 1890, the daughter of John W. Foster, who had been Secretary of State under President Harrison, and through his father-in-law's influence he turned his attention to international law. He was employed as associate counsel for the United States in the Bering Sea Administration with Great Britain, 1892-93, and he also served as counsel for the Bering Sea Claims Commission, 1896-97. He was again engaged by the Government to act as solicitor and counsel before the Alaskan Boundary Tribunal which met in London, Sept. 3, 1903. President Taft appointed him legal adviser at the North Atlantic Coast Fisheries Ar-

bitration at The Hague, 1909-10, and he was the United States agent at the American and British claims arbitration, 1912-14. Besides associations with his own Government, he represented the Chinese Legation at Washington, and the Huerta régime of Mexico.

Lansing succeeded John Bassett Moore as counselor for the Department of State, on Mar. 20, 1914. His experience in international negotiations was particularly valuable to the then Secretary of State, William Jennings Bryan, in conducting the diplomatic correspondence necessary to maintain the United States's position of neutrality during the early months of the World War, and he aided the administration in the preparation of important diplomatic notes on neutral rights sent to Great Britain and Germany. Secretary Bryan resigned in 1915 and President Wilson appointed Lansing Secretary of State. On assuming the office at this time of unusual responsibility, he wrote a series of diplomatic notes to Germany over the submarine warfare, and at the same time was in controversy with England over the export blockade. During this period and later, Lansing's position as adviser to the President and a member of his cabinet was particularly delicate, because his views were often opposed to those of Mr. Wilson, who personally controlled the entire policy of the administration. It was the President's ideal that the United States should remain neutral throughout the War, and supervise its settlement by arbitration, without a military decision. Lansing was said to favor the United States joining the Allies as early as 1914. Their lines of thought were even more diverse during the peace negotiations in Paris, 1918-19, when Lansing accompanied the President as a member of the American Commission to Negotiate Peace. Besides disagreeing with the President on particular points covered in the Versailles Treaty, such as the Shantung settlement, Secretary Lansing objected to combining that embodiment of Wilson's highest aspiration, the League of Nations, with the Peace Treaty, on the ground that the U. S. Congress would not ratify a document which included the League. The President ceased to consult his Secretary of State, and later, during his illness in 1920, disturbed by the fact that Lansing several times had assembled the cabinet, he asked for and accepted the secretary's resignation, Lansing leaving the cabinet on February 13. Wilson's action, due in large measure to his condition of health, caused astonishment and failed of general approval, being regarded as unfair and lacking in appreciation. Lansing resumed the practice of law with the firm Lansing & Woolsey, in Washington, where he was engaged until his death. Lansing served as counsel for Chile during the Tacna-Arica Arbitration, 1923-25. He became trustee and vice president of the Carnegie Endowment for International Peace. Honorary degrees were conferred on him by Amherst and Colgate, 1915, by Princeton, 1917, by Columbia and Union, 1928, by the University of the State of New York, 1919, and by Kenyon, 1925. He was associate editor of the *American Journal of International Law*, and wrote, *Government, Its Origin, Growth, and Form in the United States* (with Gary M. Jones, 1902). He also wrote two books, not only as a record of the events in which he participated but also with the object of vindicating himself from charges of disloyalty to President Wilson, *The Peace Ne-*

gotiations (1921); and *The Big Four and Others of the Peace Conference* (1921).

LANGUAGE. See PHILOLOGY, MODERN.

LAOS. See FRENCH INDO-CHINA.

LATIN AMERICA. See PAN AMERICANISM; LEAGUE OF NATIONS.

LATIN STUDIES. See PHILOLOGY, CLASSICAL.

LA TOMBELLE, FERNAND DE. A French organist and composer, died in Périgord, in August. He was born in Paris, Aug. 3, 1854. At the Conservatoire he studied organ under Guilmant and composition under Dubois. From 1885-98 he was assistant organist to Dubois at La Madeleine. He then became professor of theory at the Schola Cantorum. The last five years he lived in retirement at Périgord. His principal works are three oratorios, *Crua*, *L'Abbaye*, and *Jeanne d'Arc*; *Antar*, a symphonic poem; two ballets; two operettas; several orchestral suites, a great quantity of chamber music; choruses, and excellent pieces for the organ.

LATTER-DAY SAINTS, CHURCH OF JESUS CHRIST OF. A religious body commonly known as the Mormon Church, existing chiefly in the United States. It was organized Apr. 6, 1830, at Fayette, N. Y., by Joseph Smith, whom his followers credit with having discovered, through a divine revelation, a set of plates, buried in a hill, from which by a special power received from God, he translated the text of the Book of Mormon, the special sacred book of the church. The Mormon articles of faith include belief in God, Jesus Christ, and the Holy Ghost, the punishment of men for their own sins, the atonement, divine authority, baptism, laying on of hands, prophecy, salvation for the dead, the Bible "as far as it is translated correctly," the common virtues, and obedience to constituted authorities. The membership of the church is chiefly in the Mountain States, owing to the early migrations of Mormons and their final settlement in Utah.

The administrative divisions of the church are known as the stake, ward, branch, and mission. A stake comprises wards and branches, and is directed by a presidency of three. A ward is frequently a part of a city, and is directed by a bishop and two counselors. The branch, similar to the ward, is directed by an elder. In 1928, the church consisted of 101 stakes, 939 wards, and 72 independent branches. The estimated membership was 640,000. Eleven missions in America had a membership of approximately 87,500; those in Europe 28,000; and those in the Pacific Islands, 14,000. The chief authorities of the church were: Heber J. Grant, president; Anthony W. Ivins, first counselor; Charles W. Nibley, second counselor; Rudger Clawson, president of the Quorum of the Twelve Apostles; and Reed Smoot, George Albert Smith, George F. Richards, Orson F. Whitney, David O. McKay, Joseph Fielding Smith, James E. Talmage, Stephen L. Richards, Richard R. Lyman, Melvin J. Ballard, and John A. Widtsoe, apostles, Hyrum C. Smith was presiding patriarch; Brigham H. Roberts, J. Golden Kimball, Rulon S. Wells, Joseph W. McMurrin, Charles H. Hart, Levi Edgar Young, Rey L. Pratt, Seven Presidents of Seventy; Sylvester Q. Cannon, presiding bishop; David A. Smith, first counselor; and John Wells, second counselor.

The church authorities reported 2173 missionaries at work in various countries, 906 being outside the United States. The Melchizedek Priest-

hood, a senior order, had 73,382 members, and the Aaronic Priesthood, a junior order, 72,899 members. The Church maintains seven temples which are devoted to sacred ordinances for the living and the dead, such as baptisms, endowments, and marriages. The Church maintains Brigham Young University (q.v.) at Provo, Utah, six junior colleges, two collegiate institutes, one high school, and 72 seminaries, small schools adjoining high schools and providing special religious instruction. The auxiliary bodies include a women's relief society numbering about 61,820, which cares for the poor and sick, Sunday schools with 257,967 pupils, including 26,250 officers and teachers. The two Mutual Improvement Associations, composed of young persons, had an enrollment of 101,444. The primary association had 106,993 children under 14. Religious classes had an enrollment of 59,574. The Church holds general conferences in the first week of April and of October of each year, at Salt Lake City, Utah, at which the work of the general authorities is reviewed.

LATTER-DAY SAINTS, REORGANIZED CHURCH OF JESUS CHRIST OF. After the death of Joseph Smith in 1844, several factions developed among the Latter-Day Saints. In 1852, in Wisconsin, some of these scattered congregations effected a partial reorganization, which was later completed under the name of the "Reorganized Church of Jesus Christ of Latter-Day Saints," and which claims to be the true continuation of that established by Joseph Smith. This claim has been successfully sustained in the Supreme Court. In 1860 these organizations were joined by Joseph Smith, the son of the prophet, who became presiding officer, a position which he held until his death in 1914, when his son, Frederick M. Smith, succeeded him. The Reorganized Church holds the same faith and religious practice which Smith established, but rejects as false and inconsistent with Smith's revelation the doctrine of polygamy. The membership as reported in 1928 was 103,174, including members throughout the United States and in Canada, Great Britain, Australia, Germany, Isle of Pines, Holland, Switzerland, Norway, Sweden, Palestine, South Sea Islands, Hawaii, and New Zealand. The organization in 1928 comprised 758 churches, 6732 ministers, 714 Sunday schools, and 37,841 scholars; and maintained Graceland College at Lamoni, Iowa, the Institute of Arts and Sciences, at Independence, Mo., homes for the aged, a sanatorium, and a powerful radio broadcasting station, at Independence, Mo. Its official periodical, the *Saints' Herald*, is issued weekly.

LATVIA. A Baltic state formed after the War from territories of the old Russian Empire. Capital, Riga.

AREA AND POPULATION. The total area is approximately 24,400 square miles, made up as follows: The former Province of Courland (about 10,435 square miles); the four southern districts of the Province of Livonia (about 7815 square miles); and three districts of the Province of Vitebsk (5292 square miles). According to the census of 1925, the population was 1,844,805, of whom 1,779,593 were Latvian citizens and 65,212 foreigners. The birth rate during 1926 was 21.96 per thousand and the death rate 14.73 per thousand. The chief cities with their populations at the census of 1925 are: Riga, 337,700; Libau, 60,762; Dvinsk, 40,640; and Mitau, 28,321.

EDUCATION. In 1926-27 there were 1921 elementary schools with 7403 teachers and 164,954 pupils. Most of these schools were supported by the State or municipal institutions. The State or municipal institutions also supported 70 of the secondary schools in the country, the remaining 52 being supported by private persons or societies. In these 122 secondary schools there were 22,066 pupils and 2350 teachers. According to law, every national minority has a right to its own school, which may employ its own language in instruction, and the State contributes to such institutions in proportion to the percentage of total inhabitants. The number of students in the Latvian University in 1927 was 6766 and the number of professors, 317.

PRODUCTION, ETC. The chief industry of Latvia is agriculture, although in recent years a large number of persons have been passing from agricultural to industrial life. The area and production of the principal crops in 1927 were as follows: Wheat, 145,000 acres, 2,636,000 bushels; rye, 633,000 acres, 10,189,000 bushels; barley, 458,000 acres, 5,975,000 bushels; oats, 754,000 acres, 12,205,000 bushels; potatoes, 211,000 acres, 26,358,000 bushels; flax and linseed combined, 156,000 acres, 46,965 pounds of flax and 655,000 bushels of linseed. In 1927 there were 967,000 cattle, 535,000 swine, 1,128,000 sheep, and 369,000 horses. On Dec. 31, 1926, there were 2732 industrial enterprises in Latvia employing 49,672 hands. The total value of industrial production in the same year was 306,872,000 lats (\$59,226,000). The chief industries are food, drink, and tobacco, woodworking, chemical, textile, metal working, and paper and printing. There are virtually no minerals in Latvia.

COMMERCE. In 1927 the unfavorable balance of Latvia's trade was much less than in the preceding four years. Imports were 6 per cent lower, owing to reduced receipts of textiles, machinery, and metals. The marked improvement in export trade, which increased in value 17 per cent over 1926, was owing largely to the more satisfactory market and price conditions for the leading items—lumber, butter, and flax—which made up roughly one-half of total exports. The exports in 1927 were valued at \$42,501,000 as compared with \$36,381,000 in 1926. The imports in 1927 were valued at \$47,384,000 as against \$50,241,000 in the preceding year.

FINANCE. The fiscal year 1926-27 closed with a surplus of government receipts over expenditures of 4,600,000 lats as compared with a surplus of 1,464,000 lats for 1925-26. The actual receipts were 5 per cent below estimates, and a further curtailment of expenditures for the ministries of War, Finance, and Education, featured the budget for 1927-28 which balanced at 159,097,000 lats. Preliminary returns showed increased revenues and further curtailed expenditures for 1927-28. The 1928-29 budget balanced at 160,552,000 lats. Latvia's State debt on Dec. 31, 1927, was 84,110,000 lats, of which 28,404,000 lats were due the United States.

COMMUNICATIONS. In 1927, 4041 vessels of 1,761,000 net registered tons entered the ports of Latvia and 4048 vessels of 1,760,000 tons cleared. All Latvian railways are State owned with the exception of two lines of minor importance, which are owned by a private company. The length of all State lines on Jan. 1, 1928, totaled 2707 kilometers. Operating revenues of the State railways during 1927 amounted to 34,473,931 lats, and

other revenues comprised 5,340,046 lats; operating expenses amounted to 34,857,482 lats, and other expenses amounted to 3,963,514 lats. Rolling stock in operation at the close of the year included 276 locomotives, 671 passenger cars, and 5682 freight cars. A newly constructed line of 1.435-meter-gauge and 15.4-kilometer length, between Sece and Selpils, was opened for traffic on November 15. A part of the new 1.524-meter gauge line between Libau and Gluda was opened for traffic on December 2. A line of 0.60-meter gauge between Engure and Mersrags (12.5 kilometers long) was opened for traffic on December 15, and one of 0.75-meter gauge between Sita and RugaĶi (21.4 kilometers in length) was opened on December 20.

GOVERNMENT. Under the constitution adopted by the constituent assembly, Feb. 15, 1922, executive power is vested in a president, elected by Parliament for three years; and legislative power in the Saeima, or Parliament, comprising 100 members elected for three years, by universal suffrage (men and women), equal, direct, and secret ballot, on the basis of proportional representation. President in 1928, Gustav Zemgalis (elected April 8, 1927); Prime Minister, P. Juraševski (appointed Jan. 23, 1928).

HISTORY. The Juraševski ministry, a Bourgeois and Agrarian coalition, represented a swing in Latvian political control from the Socialistic element, whose ministry fell on Dec. 13, 1927, to a more conservative and nationalistic element. At the general election held early in October to select the 100 members of the Saeima, there were over 2000 candidates representing more than 40 parties in the contest. After the election Premier Juraševski resigned, and the Socialists, blocked by a small group of Communist deputies, were unable to form a government, a task in which Cleminsh, an Agrarian, was finally successful. His cabinet, which received a 54-40 vote of confidence on December 1, was as follows: A. Balodis, Centrist, Foreign Affairs; Petrewits, Nationalist, Finance; Charles Ozols, Nationalist, Military Affairs; Laminsh, Agrarian, Interior; A. Alberings, Agrarian, Agriculture; Ozolins, Democratic-Centre, Communications; Zemels, New Peasant, Instruction; Rubulis, Letgalian, Public Welfare; and Dilstorich, German, Justice. On November 18, Latvia appropriately celebrated the tenth anniversary of her independence.

LAW, INTERNATIONAL. See INTERNATIONAL LAW.

LAW ENFORCEMENT. See CRIME.

LAWN TENNIS. See TENNIS.

LEAD. The recoverable lead contained in ore mined in the United States in 1928 was about 627,300 short tons, as compared with an output of 655,420 tons in 1927, a decrease of nearly 6 per cent, according to the U. S. Bureau of Mines. The output of soft lead by mines of the Mississippi Valley and a small output from the Eastern States amounted to about 269,900 tons, and that of argentiferous lead by mines of the Western States amounted to about 356,100 tons. Corresponding figures for 1927 were 282,838 tons from the Mississippi Valley and the Eastern States, and 381,574 tons from the Western States. The largest output came from the southeastern Missouri district and amounted to about 193,400 tons, as compared with 196,251 tons in 1927. The output of Idaho came next and amounted to about 145,400 tons, compared with 151,019 tons in 1927. Utah ranked third with an output of about 143,-

400 tons, compared with 151,285 tons in 1927. In the Joplin district there was a decrease from 81,686 tons to 68,400 tons, 16 per cent. All of the important lead-producing States showed decreases in production in 1928. The price at Joplin of 80 per cent lead concentrates was \$85 a ton at the beginning of the year, where it remained through the week ended February 4. In the following week prices began to drop and the low for the year, \$72.50 a ton, was reached in the first week in March. Prices remained at \$72.50 a ton for five weeks and then advanced to \$82.50 in the first week in June. This price held for six weeks, then dropped to \$80 for the next seven weeks, but recovered to close the year at \$85.

The output of primary domestic desilverized lead in 1928, based on smelter and refinery returns, was about 345,000 tons; of soft lead about 226,000 tons, and of desilverized soft lead about 53,000 tons, making a total output from domestic ores of about 624,000 tons of refined lead, according to the U. S. Bureau of Mines. Corresponding figures in 1927 were 378,889 tons of desilverized lead, 233,944 tons of soft lead, and 55,487 tons of desilvered soft lead, making a total of 668,320 tons. The output of lead smelted and refined from foreign ore and bullion was about 156,000 tons, as compared with 128,210 tons in 1927. The total primary lead smelted or refined in the United States in 1928 was thus about 780,000 tons, as compared with a total of 796,530 tons in 1927—a decrease of about 2 per cent. The output of antimonial lead in 1928 was about 25,000 tons, as compared with 24,347 tons in 1927.

The imports of refined pig lead for eleven months amounted to 605 tons, of which 546 tons came from Mexico. The base bullion imported during the same period contained 114,836 tons of lead, almost wholly from Mexico. The exports of lead of foreign origin amounted to nearly 98,000 tons, as compared with 122,734 tons exported in the entire year 1927. Exports of lead of domestic origin amounted to 10,858 tons, as compared with 2533 tons exported in 1927. It was calculated that the new supply of lead made available for consumption in 1928 was about 653,000 tons, as compared with 663,412 tons in 1927.

According to figures published by the American Metal Market, the average quoted price of lead for prompt delivery at New York for the year was 6.3 cents a pound, as compared with an average selling price of 6.3 cents in 1927. The quotation at the beginning of the year was 6.5 cents and in the closing days of the year it was 6.5 cents. The following are the average monthly prices on lead for prompt delivery at New York, in cents a pound:

January	6.50	July	6.22
February	6.34	August	6.25
March	6.02	September	6.45
April	6.11	October	6.50
May	6.13	November	6.39
June	6.30	December	6.50

See METALLURGY.

LEADVILLE, FIFTIETH ANNIVERSARY. See CELEBRATIONS.

LEAGUE OF NATIONS. The League of Nations was ten years old on Jan. 10, 1928, and its celebration was the occasion for a considerable number of evaluating editorials in the European press.

In January the main interests of the League were not in Geneva, two being directly instigated

by the League and two outside it but of general world interest. First and most immediate was the development of the Polish-Lithuanian negotiations set under way at the December Council; second, the development of the security and arbitration problem with formal statements of policy issued by several governments and a preliminary meeting at Prague; third and outside the League but directly brought into relation with it, the Franco-American negotiations to outlaw war, and the Pan-American Conference at Havana.

The Polish-Lithuanian dispute, contained immediately disquieting elements. The month before, a resolution had been unanimously approved that a "state of war" which had existed between the two states ever since the seizure of Vilna was not in conformity with the League Covenant and the principles of peace, and that, therefore, the two states should negotiate for the resumption of normal relations. This resolution resolved the immediate crisis, but did not claim to settle the fundamental issue. To that end the two parties were left to their own good will, with League expert advice and help available, if desired. During January negotiations for a first meeting proceeded slowly and cautiously, a Polish diplomat even crossed the frontier to the Lithuanian capital, and the outline of discussions began to take form. It was evident, however, that agreement would come slowly and after considerable difficulty, though the situation was no longer so acute.

Two important international loans were further advanced during January. Final arrangements were made for the Greek loan of \$32,500,000 for issue on the various international markets at a very favorable rate, thus providing Greece with funds for the threefold purpose of completing the settlement of her million and a quarter refugees, of reorganizing her finances, and of balancing her budget. An incidental by-product of the agreement was the settlement of the long-dragging Greek war debt to the United States and the issuance of a new Governmental credit.

Portugal's request to the League for a stabilization loan of about \$60,000,000 was advanced the next step by the sending of a League technical commission to Lisbon to consult with the Government as to purpose, security, and terms. The Portuguese request was interesting as that of the first nation outside Eastern Europe to appeal to the League and as carrying the formal announcement of her Foreign Minister that such was the best method of international financing. Loans so issued in 1928 totaled nearly \$400,000,000 and included countries such as Austria, Hungary, Greece, Bulgaria, Esthonia and Dantzic.

The forty-ninth Session of the League opened on March 5, with Francisco J. Urrutia, of Colombia, in the chair. The question of the proposed transfer of the League headquarters was settled in favor of remaining at Geneva. The report of the special committee that had been studying the question of a new building on Lake Lemman was definitely approved, and the Secretary General was empowered to proceed with contracts which involve \$4,000,000. M. Briand insisted on a proper facade for the new building.

A committee of three was appointed by the Council to study the two hundred pages of documents submitted by General Tanczos, of Hungary, who appeared before the Council to testify in the matter of the arms shipment. The guns, said the General, were destined for Poland. Bills of lading

were produced from an Italian shipping firm in Verona, but were found by the Council to need further substantiation. General Tanczos insisted that the guns were destroyed by the Hungarian Government in the interests of peace. The Council finally decided upon an investigation, to take place on Hungarian soil. The actual settlement of the matter was postponed until the June session.

As a result of a stormy debate over the Hungarian landowners in Rumania. M. Titulescu, Foreign Minister for that country, resigned on March 14, as delegate to the League of Nations. He had expressed extreme dissatisfaction with the proposal of the Council that two neutral members be added to the committee that had already been sitting for almost a year in adjudication of the controversy, and that the decision of the committee be accepted by the June Council. His attitude was reprobated by a majority of the Council members.

The Security and Arbitration Committee adjourned until June, after adopting six model treaties. Great Britain was said to take the same position as at other sessions, that she would have nothing to do with these treaties, though she would not oppose their adoption by other states. A telegram was received by the Secretariat on March 6, from M. Litvinov, the Soviet delegate to the Disarmament Conference, saying that no really comprehensive programme of disarmament could be put into effect without the coöperation of Turkey, whose participation in the conference he proposed. The invitation was extended and was accepted by Turkey, Tewfik Rushdi Bey, Foreign Minister, serving as representative.

Upon the initiative of Señor Urrutia of Colombia, presiding officer, the Council approved a suggestion that a resolution and a letter be sent to Spain and Brazil urging their return to active participation in the work of the League of Nations. Under the rules of the League two years' notice of withdrawal must be given. That of Brazil expired in June, while Spain's expired in September. Spain responded favorably, Premier de Rivera in his letter of acceptance to the president of the Council said:

The Government trusts that the Assembly will determine the form and position to which Spain is entitled in order that her participation may be efficacious and useful in conformity with her special situation as a great neutral power during the late War and her ancient position of creator of civilized nations.

On May 8 Brazil replied to the appeal of the League and refused to cancel the resignation. However, it manifested a readiness to continue coöperating with the League.

The facts which preceded that decision are well known. The Government now responsible for the policy of Brazil, duly considering the subject both from the political and moral standpoint reviewing all documents in the case with the sole purpose of being loyal to the duties and responsibilities of this country, finds no determining factor for altering under such delicate circumstances a situation which had already been clearly defined, since the contingencies which brought it about are in no wise changed.

The note insisted that only by occupying a seat in the assembly, or council, could a country adequately coöperate with the League. Much speculation was aroused by the letter, as the coöperation of Brazil at conferences without membership paved the way for allowing resigned members to continue their coöperation with the League body.

The United States was deeply interested in much of the work of the League. The Government

signed the Convention on Import and Export Restrictions, the second League convention to bear an American signature; sent an expert to the meeting on Maritime Tonnage Measurements, but declined the invitation to the Arbitration and Security Committee. At the same time the U. S. State Department, in agreement with Congress, forwarded the sum of \$16,000 to cover its proportional share of the four general conferences recently attended by the United States on disarmament, economics, import and export restrictions and transit.

On June 4, the Council met for its fiftieth session. It had been anticipated that this would be a most important session, since it was expected that the question of the occupation of the Rhineland would come up. The absence of M. Briand and Dr. Stresemann, however, both of whom were suffering in health, rendered the work of the Council disappointingly unimportant. After a session lasting a whole week, the Council failed to make any decision, except on unimportant and routine matters. It did take up three questions—the Hungarian machine-gun affair, the Hungarian-Rumanian dispute, and the Polish-Lithuanian controversy—but on none of these questions did it come to any definite conclusion.

The Council had before it a long and detailed report of the Committee of Three consisting of representatives from Holland, Finland, and Chile, appointed at the preceding session, to look into the seizure of five carloads of machine-gun parts at the railway station of Szent-Gothard. The report in spite of its length and its wealth of detail was inconclusive and was subjected to strong criticism.

All the Little Entente Powers were represented at the council table, and they and the French representative pointed out several gaps in the committee's statement and in its conclusions. It apparently did think it strange that a consignment of machine-gun parts should be addressed to a firm in a town on the borders of Hungary and Czechoslovakia, the station being in one country and the part of the town where the firm was in the other, that firm having had no notification that this unusual cargo of goods was on the way. This firm was said to be charged with the duty of furthering the goods to Warsaw. The evidence clearly indicated that the load was intended to remain in Hungary, and the persons who were selected for censure in the report were the Austrian customs officials, who had discovered the contents of the trucks. Some of the evidence suggested that there might have been a whole series of consignments. Moreover, taking the total weight of the consignment as given in the waybill and as ascertained on the spot, there was a discrepancy of four tons. By a rapid calculation, M. Paul-Boncour estimated that this missing mass of machine-gun parts might be sufficient to arm several divisions of infantry. There had, in fact, been no effective investigation, he declared.

The Council's resolution on the report was vague. It stated that the importance of the case was proved by the nature of the debate, reminded members that an extraordinary meeting of members could be summoned by any of them at any time, and urged the speedy ratification by all states of the convention on the traffic in arms. Regret was expressed as to the gravity of the incident and the indifference of the Hungarian Gov-

ernment as to the destination of the material.

As to the question of the Hungarian optants in Transylvania, the Council once more had to be satisfied with urging the Rumanian and Hungarian governments to make reciprocal concessions and thus find a solution upon the basis of the recommendations made at earlier sessions. M. Titulescu, the Rumanian Minister for Foreign Affairs, announced that he was about to propose to Hungary that one member of the Council, he made it quite clear that he had in mind Sir Austen Chamberlain, should look into the individual cases of the dispossessed landowners, being assisted by two persons of his own choice. Acting on the basis of the Council resolutions, the Rumanian law of agrarian reform, and Article 250 of the Treaty of Trianon, he should then decide whether any additional compensation was due to the Hungarian optants; and, if the findings were to that effect, then the compensation would be paid by the Hungarian Government, which could recoup itself by deducting that amount from the reparations due from Hungary to Rumania, Count Apponyi, the Hungarian representative, put in a strong plea for the appointment of a judge to the Mixed Arbitral Tribunal in place of the one withdrawn by Rumania, that the Council might thus fulfill, as he contended, the obvious intention of the Treaty of Trianon. It was the plain duty of the Council, he urged, to reconstitute the court and insure its intangibility.

Sir Austen Chamberlain argued in reply that there were several ways of settling disputes, of which arbitration was only one. It was a means to an end, not an end in itself, as Count Apponyi sometimes seemed to suggest. Compromise and reciprocal concession were often better. Count Apponyi said that several attempts had already been made to settle the question by private negotiation and they had failed. He could not, therefore, feel very hopeful that any result would be reached. Sir Austen Chamberlain said he felt more optimistic than Count Apponyi, and there the matter rested.

The consideration of the Polish-Lithuanian question was enlivened by the communication by the Polish Foreign Minister of a note, which he had addressed to the Lithuanian Prime Minister, in reference to Article V, of the Lithuanian Constitution, proclaiming Vilna the capital of the Lithuanian Republic. He stated that the Polish Government regarded the insertion in the Constitution of the Lithuanian State of an amendment directed against the territorial integrity of Poland as a hollow manifestation, devoid of legal significance or practical effect. He went on to say:

I am forced to observe with displeasure that the promulgation of this amendment can only serve to impede and embitter present negotiations, of which the aim is to establish relations that will make possible between two neighboring States the good understanding on which peace depends, and must therefore be regarded as contrary to the resolution of the Council of the League adopted on December 10, 1927. I take the liberty of reminding you, in conclusion, that the Polish Government's obligation to respect the integrity of the Lithuanian Republic imposes a like obligation on the Lithuanian Government.

This reference to Vilna in the new draft of the country's constitution produced a poor impression at the Council. Sir Austen Chamberlain, in a press conference, warned Lithuania against actions of this sort. At the Council session he made a warm appeal to the Lithuanian Govern-

ment on the same subject declaring that the Lithuanian Prime Minister had solemnly undertaken before the Council in December to end the "state of war" with Poland; and Poland, on her side, had promised to respect the integrity of Lithuania. Six months had passed and no appreciable progress had been made. There had been committed by Lithuania an act of provocation quite contrary to the recommendations of the Council, and he begged M. Valdemaras to show a greater spirit of conciliation. He repeated his warning that the sympathy with a small nation always easily gained might be forfeited if Lithuania followed a course that no state could tolerate from another state. Every nation had need of sympathy; and Sir Austen adjured him to show a spirit of good will.

After argument and various suggestions a motion was passed, at the instance of Sir Austen, that the question should be placed on the agenda of the next session of the Council.

A statement was reported from Geneva on June 23 said to have been made by M. Walko, Hungarian Minister of Foreign Affairs, to the effect that his Government was unable to accept the Rumanian plan for the settlement of the claims of the Hungarian optants in Rumania. This plan called for the reimbursing of the Hungarian optants by reducing the payments from the Hungarian reparations due to Rumania. The matter was then ruled to be out of the League's control and left to settlement between the two parties concerned. Fear was felt that the matter would again be brought up before the League.

In the course of discussion in the Council of the League on the Albanian complaint against the Greek Government, M. Politis, the Greek authority on international law, stated that it was not the intention of the League minorities treaties to perpetuate the existence of minorities in the respective countries. He also wished the Council to make it impossible for minorities to lay their complaints directly on the table of the Council. On the other hand, a note was addressed to the Secretary General of the League by Dr. Wilfan, president of the National Minorities Congress, and Dr. Ammende, the secretary general, objecting to the appointment, to the post of Director of the Minorities Section of the League rumored as possible, a citizen of a country which itself has minorities.

On July 26, Lithuania sent a protest to the secretariat of the League complaining against Polish military maneuvers said to be held near the Lithuanian frontier. The note would be communicated to members of the Council, especially to Poland. The Polish Telegraphic Agency, however, announced the same day that the Polish Government had no intention of holding manoeuvres of the Polish Army around Vilna, except ordinary military manoeuvres. A warning, however, was subsequently sent to Poland by the German Foreign Minister.

Identical telegrams were sent on August 7 to the League by Great Britain, France, and Germany, giving notice that they would ask the Assembly to revive the temporary regulation of 1926, whereby a country elected to the Council can be declared eligible for reelection at the moment it is first chosen. The request was made on behalf of Spain, in order that that country since her return to the League, could enjoy virtual permanence on the Council.

The Council met for its fifty-first session on

August 29 in an atmosphere of optimism based primarily on the signing at Paris on the preceding Monday of the Kellogg-Briand anti-war treaty. Lord Cushendun, who replaced Sir Austen Chamberlain for England on the Council, declared the pact would lead to reduction of armament. While he was expressing this sentiment, delegates to the preliminary conference on private manufacture of arms were dolefully admitting supreme difficulties in the way of reaching an agreement on the text of a draft convention. It was said certain fundamental divergencies of views made it impossible to agree upon a single text and that another session would be necessary before convocation of the International Congress for Control of the Manufacture of Armaments can be thought of.

Hjalmar J. Procope, youthful Finnish Foreign Minister, was the council's new president. Two leading figures of previous sessions were missing—Sir Austen Chamberlain and Gustav Stresemann, both being ill. Premier MacKenzie King of Canada was one of the Canadian delegates. For the first time in the history of the League a woman was elected to an office in the Assembly which carried with it chairmanship functions. Mrs. Hinni Forchammer, president of the National Council of Danish Women, was unanimously chosen vice chairman of the Assembly Committee, which handles social and humanitarian questions. The jurisdiction of the committee includes such problems as traffic in opium, child welfare, and the protection of the interests of women. Mrs. Forchammer had been a member of the Danish delegation since the inception of the League and in 1920 was the first woman to address the Assembly from the floor.

As further evidence of the important rôle which women were playing in international political life, the League delegates appointed Mrs. Hainari, of Finland, official reporter to the Assembly on traffic in women and children, and then named Dame Edith Lyttleton, a British delegate, on the commission, which was to consider opium smoking in the Far East. On this question Great Britain had proposed the appointment of a special commission of experts to visit the Orient and study conditions on the spot.

On August 15, the League Secretariat officially received a request from the Minister of Foreign Affairs of Costa Rica as to its attitude on the Monroe Doctrine. The query came in response to a League recommendation urging that Costa Rica, which had withdrawn its membership in the League about four years previously, resume participation in its affairs, and the Minister explained that the attitude of the League on the Monroe Doctrine might affect his Government's action about reëntering. The Costa Rican Foreign Minister, Señor Castro, explained that as the Doctrine is mentioned in Article XXI of the League Covenant it has acquired an official international judicial value among the nations signing the Treaty of Versailles, but that nevertheless at various times in history statements and public opinion, in the absence of any uniform interpretation of the doctrine, have been divided regarding it. Against the background of Costa Rica's request there had been painted the picture of a Pan-American Union pitted against the League.

"Nothing in this Covenant shall be deemed to affect the validity of . . . regional understandings like the Monroe Doctrine for securing the

maintenance of peace." So reads Article XXI of the League Covenant. How does the league interpret the Monroe Doctrine, and what is the effect upon that doctrine of the circumstance that it had been mentioned in the Covenant?

To Costa Rica, asking these questions, the Council replied on September 1 that reference to the Monroe Doctrine in the League Covenant had not given the doctrine a sanction or validity it did not possess before. Moreover, since the Monroe Doctrine concerned only states which had accepted certain engagements among themselves, it was not for the League to define it at present. It was Colombia, Chile, and Cuba, whose representatives pressed the Council to return a specific answer to Costa Rica's inquiry; threatening, so it was said, that if the Council failed to respond, the question would be interjected into the debates of the Assembly itself, where embarrassing developments might ensue. By returning an answer which was alleged to have satisfied Costa Rica's three supporters at least temporarily, the League Council succeeded in avoiding a public discussion, which in view of its desire not to offend the United States, and in view of the well-known feelings of Colombia on the subject, might have proved somewhat embarrassing.

This was one phase of the Latin and Latin-American attitude toward the League. Spain had reconsidered her withdrawal. Upon Germany's admission to the League in 1926, Spain demanded a permanent seat on the Council as the mother of the seventeen members of the League of Spanish origin. Brazil, although of Portuguese extraction, made the same demand and for the same reason. When the other members did not see fit to accept these requests, both Spain and Brazil served the necessary two years' notice of withdrawal. Spain made a gracious affirmative reply to the invitation to return. Brazil, it was understood, would decline to return as long as there is no permanent Latin-American representative on the Council. Bound to the United States by ties of sympathy, as the Havana Conference showed, Brazil's decision might be influenced by the attitude of the United States toward the League.

Argentina also had shown signs of increasing sympathy. As early as July 1919 she informed the League of her adhesion to the Covenant, subject to the approval of her legislature—which so far had not been given. Argentina was nevertheless represented at the 1920 Assembly, but withdrew upon the failure of the Assembly to take to its bosom the Central Powers. Later however, she paid up her quota of League expenses and maintained a permanent representative at Geneva. In the autumn of 1927, the Government urged upon the Argentinian Congress the passage of a bill of adhesion to the League, which, however, failed of adoption before adjournment. Argentinian representatives had, nevertheless, attended the meetings of various League Commissions, and the representative at the recent meeting of the Security Commission made his presence known by a virtual repudiation of the Monroe Doctrine, which he declared was not a "regional understanding" and had not been explicitly approved by any Latin-American state. In view of Argentina's traditional opposition to Pan-American agreements, in contrast to international ones, and especially in view of her controversy with the United States at Havana, it was logical to believe that she would soon seek readmission.

The largest attendance of any of the annual

sessions of the League yet held was a feature of the Ninth Assembly, which sat from September 3 to September 26 under the presidency of M. Zahle of Denmark. Fifty nations were represented, including Spain; a fifty-first, Argentina, was represented by an observer; another, Costa Rica, signified its intention to return. In the same way, the importance of the delegates representing the various countries maintained the steady upward trend of recent years, with 6 Prime Ministers and 18 Foreign Ministers present. The German Chancellor, the Foreign Ministers of Great Britain and France, and the representatives of Italy and Japan entered into the first direct round-table discussions of the vital questions of the evacuation of the Rhineland and the future of the reparations problem. Progress was made, not only in the capital fact itself that at last the essential negotiations had begun but also in the clear statement of the points at issue and agreement on certain principles.

During the general debate occupying the first week of the Assembly, over a score of speakers rendered homage to the Kellogg-Briand pact and stressed its possibilities for the abolition of the dreaded war system. If the disarmament did not advance at the Ninth Assembly, progress was nevertheless made in connection with peaceful settlement. First of all, the three model multilateral treaties on arbitration and conciliation were welded together into one General Act which it was hoped might become a sort of world juridical charter. The document aimed to comprise all the most advanced methods of peaceful settlement, so arranged that each state may subscribe the various sections which conform to its views.

The Assembly further approved three treaties on non-aggression and mutual assistance, suggested that the Council offer its good offices to states desiring them, approved the German suggestions concerning a model treaty for strengthening the means of preventing war, further expedited the matter of financial assistance to states victims of aggression, and considered two alternative schemes for providing the League with a wireless station to assure communication in case of emergency.

WORLD COURT. Three important steps were taken in connection with the Permanent Court of International Justice which might have an indirect effect on America's relationship to the court. First, following the resignation of John Bassett Moore as a judge, the great majority of the national groups nominated Charles Evans Hughes to succeed him and the Assembly and the Council of the League overwhelmingly confirmed the choice. Second, in view of eight years' experience and of the renewal of the judges in 1930, the Assembly initiated steps to consider what, if any, revisions of the statutes experience had shown desirable. Third, the vexed question as to whether unanimity or majority was needed to ask an advisory opinion of the Court, practically the only obstacle to America's membership, was formally scheduled for consideration, though immediate action was not expected. Spain and Hungary signed the compulsory jurisdiction clause and the Assembly elaborated plans to secure its universal acceptance. Finally, in the fields of international law the Assembly definitely fixed the First Codification Conference for the Hague in 1930, unless postponement of the Disarmament Conference made it possible to advance it.

The fifty-third session of the League met December 10 in Lugano on the suggestion of Dr. Gustave Stresemann, German Foreign Minister, "for reasons concerning his health and the great value he attaches to meeting his colleagues." It was the first time in nine months that Briand, Chamberlain, and Stresemann had met together, and some progress appeared to have been made toward settling the important questions of Rhineland evacuation and reparation. Since the conclusion of the preliminary agreement between the six "great powers" at Geneva on Sept. 16, 1928, for the formation of commissions of experts to settle these two problems, there had been much maneuvering for position that had resulted in considerable bad feeling all around. The Germans maintained that there must be no official linking of evacuation and reparation; the French as consistently held that Germany must pay for early evacuation. There had been acrimonious discussion of the composition of the new body of reparation experts.

All three Foreign Ministers shortly before the Lugano meeting expressed themselves uncompromisingly in their respective parliaments. Sir Austen Chamberlain, in declaring in the House of Commons on December 3, that Germany had no legal right to demand freedom of the Rhineland until she had executed not merely her current reparation obligations but the whole of them, added that though this was the strict legal interpretation, as a matter of policy, the British Government would welcome early evacuation. At Lugano, the "Big Three" were reported according to the Foreign Policy Association to have told one another that their statements were "for home consumption only" and to have promised to refrain from similar remarks in the future.

While the Lugano conversations were in progress, it was announced from Paris semi-officially on December 11 that an agreement had been reached between France and Germany in regard to the composition of the Experts' Committee which would make a definite and complete settlement of reparation:

1. The two experts from each country will be independent financial authorities, and the governments will not be bound by their decisions.
2. The experts will be "designated by their governments" but those of the Allied States will be nominated by the Reparation Commission.
3. Allied and German delegates will participate on a footing of complete equality.
4. The United States will be invited to participate, the American delegates acting in a "private capacity."
5. The committee, meeting in Paris and later in Berlin if it desires, will fix the number of annuities Germany must pay. It will also establish a programme for commercialization of the German debt.
6. The committee will report to the Reparation Commission.

On December 13, a tentative agreement was reached at Lugano, according to which Briand promised Stresemann that the second zone of the Rhineland would be evacuated as soon as the experts have made their report. The French idea seemed to be then to evacuate the third zone progressively as the German reparation obligations were commercialized, but nothing had been decided.

Announcement was made that an accord between Great Britain and Italy had been reached as to the procedure for carrying out the agreement of settlement of the reparations problem and evacuation of the Rhineland. A threatened German-Polish riot in the last session of the

Council, when Dr. Stresemann rose to reply to a charge by M. Zaleski against the Germans in Silesia was averted by the good offices of M. Briand. Progress was also reported in the solution of the Polish-Lithuanian trouble inasmuch as the Lithuanian delegate consented to an examination by the League's Transit Committee of the situation created by the occupation of the Polish forces of the City of Vilna.

A gift of \$2,000,000 from Mr. John D. Rockefeller, Jr., was placed at the disposal of the League of Nations to be used for the construction or endowment of the library. It was an absolute gift with no conditions attached, an earnest of further benefactions, and a tribute to the progress of international peace.

The new librarian of the League was Dr. T. P. Sevensma of Holland. He had been librarian of the University of Amsterdam. The committee in charge of the library consisted of M. Scialoja (president) Representative of Italy on the Council; William Warner Bishop, librarian of the University of Michigan; Dr. Raymond B. Fosdick, former under-secretary general of the League of Nations; Dr. Hugo Kruss, director of the Prussian Staatsbibliothek in Berlin; M. de Maday, librarian of the International Labor Office, Geneva; Dr. P. Roland-Marcel, director of the Bibliotheque Nationale, Paris; Sir James Rennell Rodd, and Dr. Sevensma, librarian of the League. This committee decided to erect a building separate from the new Palace of Nations, already under way, to make the library as accessible to the public as possible. Two-fifths of the money donated was to be used in construction and the remainder retained as an endowment.

See ARBITRATION, INTERNATIONAL; KELLOGG TREATIES. For description of new buildings at Geneva, see ARCHITECTURE.

LEATHER. The output of American tanneries in 1928, as reported in the annual summary of the U. S. Bureau of Commerce, was the equivalent of 20,238,793 cattle hides including kip sides, as compared with 21,820,368 in 1927 and 21,496,486 in 1926. Some 70 per cent of the hides used in the American leather industry were domestic, while the balance, 6,155,698 valued at \$63,694,386, were imported, Argentina supplying the largest amount. The production of calf and whole kip skins in the United States in 1928 was 15,617,325, as compared with 16,986,711 in 1927, and 17,744,265 in 1926. The imports of kip and calf skins in 1928 were 6,974,951 valued

at \$16,104,535, or roughly 40 per cent of the American requirements. The American production of goat and kid skins in 1928 was 54,854,035 skins, as against 50,735,666 in 1927 and 49,775,646 in 1926. Of these, practically all, or 53,482,062 valued at \$41,740,335, were imported in 1928. These raw goat skins came from China, Brazil, India, and other foreign countries. The American production of leather from sheep and lamb skins in 1928 was 39,015,490 as compared with 36,061,673 in 1927, and 31,665,182 in 1926. Into this, leather which was used for gloves, garments, linings, millinery, and other purposes, in addition to 30 per cent from American slaughtering houses, went imports of 25,619,673 skins valued at \$20,730,983 in 1928.

PRODUCTION OF LEATHER IN THE MANUFACTURE OF BOOTS, SHOES, BELTING, ETC. IN OTHER PLANTS OF THE LEATHER-PRODUCING ESTABLISHMENTS, BY KIND AND VALUE, 1927

Kind	Tanned, curried, and finished, including tanned only	Curried and finished only
Aggregate value of leather	\$438,872,881	\$14,856,734
For sale:		
Total	365,143,889	11,614,117
Heavy leather	130,634,209	6,591,566
Upper leather	193,320,947	1,417,771
Glove leather	17,132,363	131,082
Fancy and miscellaneous leather	23,856,370	3,473,698
For consumption, in the manufacture of boots, shoes, belting, etc., in other plants of the leather-producing establishments:		
Total	73,728,992	3,242,617
Heavy leather	43,715,781	2,676,027
Upper leather	29,603,678	566,590
Glove leather	390,929	.....
Fancy and miscellaneous leather	18,604	.....

In 1928 the statistics from the Federal Meat Inspection of Slaughterhouses again indicated fewer cattle, calves, and goats slaughtered in the United States in the previous year, and but a slight increase in the number of sheep and of swine. See LIVESTOCK.

From the foregoing statements it is quite obvious that any revision of the tariff as respects both hides and manufactures of leather would have an important relation to this industry. Not only was it deemed necessary to protect the American tanner and the farmer, but at the same time foreign supplies of raw hides and skins were essential in many departments of the industry. During 1928, the United States imported leather manufactured goods valued at \$25,651,534, an increase of 18.4 per cent over the value of similar goods (\$21,657,420) imported during 1927. The value of the leather gloves imported constituted \$11,103,469 of this amount, leather boots and shoes (free of duty) \$3,254,224, leather slippers (free of duty), \$1,019,435, dutiable footwear \$316,193, bags, baskets, etc., \$3,508,918; and miscellaneous goods \$1,449,295.

EXPORTS. The exports of raw hide and skins from the United States in 1928 totaled 46,441,795 pounds valued at \$11,076,598, as against 63,992,499 pounds valued at \$11,475,652 in 1927. There was a decrease in both quantity and value of cattle hides, but a slight increase in value, though a decrease of quantity in calf, sheep, and goat skins, and other hides and skins ex-

PRODUCTION OF LEATHER, BY KINDS OF HIDES AND SKINS REPRESENTED

Kind	1928	1927
Cattle (including kip side) *	20,238,793	21,820,368
.....equivalent hides..	15,617,325	16,986,711
Calf and whole kip	54,854,035	50,735,666
Goat and kid	3,262,621	3,406,852
Cabretta	39,015,490	36,061,673
Sheep and lamb	859,139	887,910
Deer and elk	882,535	705,268
Kangaroo and wallaby	192,214	351,331
Seal	522,291	347,869
Pig and hog		

* The following procedure was used in the consolidation of production data: Sides of sole, harness, bag, case, and strap, skirting, collar, latigo, lace, upper, patent, glove, fancy, raw hide, and rough leather were added together and divided by 2. To this quantity was added the actual number of rough belting butts, upholstery grains, and machine-buffed hides. The figures include buffalo hides, of which 252,691 were reported as "wet in" during the year. Curried belting butts, wetting leather, buffings, and splits were excluded.

Includes skivers but excludes chamois and other fashers.

SUMMARY FOR THE LEATHER INDUSTRY
1927 AND 1928

	1927	1928	Per cent of in- crease or de- crease (—)
Number of establish- ments	494	532	- 7.1
Wage earners (av- erage number) ^a	53,047	53,043	(^b)
Wages ^c	\$68,057,322	\$66,762,077	1.9
Cost of materials, supplies, fuel, and purchased power, total ^c	\$331,883,142	\$306,633,977	8.2
Materials and sup- plies ^d	\$324,217,009	(^e)	...
Fuel and power ^e	\$7,666,133	(^e)	...
Value of products ^c	\$494,780,821	\$462,013,572	7.1
Value added by manufacture ^f ..	\$162,897,679	\$155,379,595	4.8
Horsepower	225,853	222,678	1.4

^a Not including salaried employees.^b Less than one-tenth of one per cent.^c The amount of manufacturers' profits cannot be calculated from the census figures, for the reason that no data are collected in regard to a number of items of expense, such as interest on investment, rent, depreciation, taxes, insurance, and advertising.^d Includes the cost of contract work, raw hides, tanning extracts, and tanned leather purchased or transferred from one plant to another for currying and finishing. Does not include the value of hides or leather tanned, curried, and finished as contract or custom work.^e Not reported separately.^f Value of products less cost of materials, shop supplies, fuel, and purchased power.

ported. The exports of leather in 1928 were valued at \$55,165,390, as compared with \$54,003,342 in 1927. Manufactures of leather exported from the United States in 1928 were valued at \$17,503,574, as compared with \$18,381,424 in 1927. See **BOOTS AND SHOES**.

CENSUS OF MANUFACTURES. The U. S. Department of Commerce announced that according to data collected at the biennial census of manufactures taken in 1928, the establishments engaged primarily in tanning, currying, and finishing leather in 1927 reported a total output valued at \$494,780,821, an increase of 7.1 per cent, as compared with \$462,013,572 for 1925, the last preceding census year. This classification covered tanneries manufacturing leather from hides and skins of all kinds, domestic and imported, and establishments engaged in currying and finishing leather.

LEAVITT, Iev'it, CHARLES WELLFORD. American civil and landscape engineer, died at Hartsdale, N. Y., April 22. He was born at Riverton, N. J., Mar. 13, 1871. He was graduated from the Cheltenham, Pa., Military Academy in 1888, and began his professional work as assistant engineer of the East Jersey Water Company. In 1890 he became assistant engineer and later chief engineer in charge of construction of the Caldwell Railway, which was later merged with the Erie R. R. He left the field of railway engineering for that of landscape engineering, engaging extensively in private practice.

LEAVITT, FRANK McDOWELL. American engineer and inventor, died August 6, at Scarsdale, N. Y. He was born at Athens, Ohio, Mar. 3, 1856, and was graduated from Stevens Institute of Technology in 1875. Two years later he became head draftsman for Bliss & Williams, of Brooklyn, and in 1881 he became master mechanic for the Texas-Mexican Railway. In the following year he became manager of the Graydon & Denton Manufacturing Company, of New Jersey.

He returned, as assistant superintendent in 1884, to the firm which was then the E. W. Bliss Company, and, becoming chief engineer, he remained with the Bliss Company until his death. Having introduced the Whitehead torpedo into the U. S. Navy in 1890, he invented and developed the Bliss-Leavitt torpedo. In 1890 he also established the United States Projectile Company, which manufactured ammunition. He also invented automatic machinery for making tin cans.

LEEWARD ISLANDS. A group of islands belonging to Great Britain in the West Indies; the most northerly group of the British Lesser Antilles, lying to the north of the Windward group and southeast of Porto Rico, comprising Antigua, Dominica, Montserrat, St. Kitts (with Nevis and Anguilla), and the British Virgin Islands. Total area, 715 square miles; population at the census of 1921, 122,242, as compared with 127,193 in 1911. The two largest islands with their area and population in 1921 were: Dominica, 305 square miles and 37,059 inhabitants; Antigua, 108 square miles, but with Barbuda and Redonda, 170 square miles, with a population of 29,767. The chief towns are Roseau (Dominica), 7000 inhabitants; St. John (Antigua), 9262 inhabitants; and Basseterre (St. Kitts), 7736 inhabitants. The British Virgin Islands comprise all those in the group which do not belong to the United States; area, 58 square miles; population (1921), 5082. The staple products in most of the islands are sugar and molasses. Cacao and onions are also grown. The culture of tobacco and cotton is successfully carried on in Dominica. On that island and Montserrat, lime juice and citrate of lime are important products. In 1926-27 the revenue was £289,393; expenditure, £259,037; public debt, £278,850; imports, £842,464; and exports, £662,492. The islands are divided into five presidencies under a central government, at the head of which is a governor, who is also commander-in-chief, a Federal executive council, and a Federal legislative council. Governor, Sir Eustace Fienness.

LEGION, AMERICAN. See **AMERICAN LEGION**.
LEGISLATION. See **AGRICULTURAL LEGISLATION**; **LABOR LEGISLATION**; paragraphs on **LEGISLATION** under the several States; and the article **UNITED STATES**.

LEHIGH UNIVERSITY. A non-sectarian institution for the higher education of men at Bethlehem, Pa., founded in 1866; composed of colleges of engineering, business administration, and arts and science. The enrollment for the autumn of 1928 was 1477, and for the summer session of that year there were 466 registered. The number of members in the faculty was 155. Productive endowment funds for the year amounted to \$5,123,112, and the income to \$1,125,158. There were 127,902 bound volumes and 51,307 pamphlets in the library. On June 9, the cornerstone of the new Packard Laboratory for the electrical and mechanical engineering departments was laid; and in September, construction was begun on a new library structure designed to increase the library facilities approximately four-fold. President, Charles Russ Richards, M.M.E., Eng.D., LL.D.

LELAND STANFORD UNIVERSITY. See **STANFORD UNIVERSITY**.

LEMONS. See **HORTICULTURE**.

LENNOX, CHARLES HENRY GORDON. See **RICHMOND AND GORDON, DUKE OF**.

LEPROSY. The literature of the past few years has been decidedly optimistic in regard to successful dealing with the problem of leprosy, but there is evidence that this attitude may have to be modified. Professor Olpp of Tübingen has expressed himself in both directions in an article in the *Klinische Wochenschrift* for Sept. 23, 1928. While he is encouraged by the great interest and activity manifested in this disease and the new remedies which promise great benefit, he was able to show that the leper population of the world had been absurdly underestimated. Thus the number of lepers in India had been conventionally fixed at about 100,000, but the recent canvass of Cochrane, medical adviser to the Mission to Lepers, had shown that the true figure was more than 1,000,000. In like manner Japan had been thought to have a leper population of 10,000, but a recent census, conducted by Sir L. Rogers, yielded a total of 102,585. If the African Continent is taken as an integer, the leper population runs to more than 525,000, Belgian Congo alone having 90,000. China rivals India in having a million lepers, while Russia has 150,000, and Latin America, 60,000. The only countries comparatively free are Europe (with certain States excepted), the Near East, and North America, to which might be added Oceania, where there are less than 5000. The total leper population of the world was placed at more than 3,000,000.

LEXICOGRAPHY. See PHILOLOGY, MODERN.
LIABILITY INSURANCE. See AUTOMOBILES; INSURANCE.

LIBERIA. A Negro republic on the west coast of Africa, reaching from the British colony of Sierra Leone on the west to the French Ivory Coast on the east, with about 350 miles of coast line, and extending inland at some points to a distance of 200 miles. Area, variously estimated at 35,000 to 43,000 square miles, and population at 2,000,000 to 2,500,000, most of whom live in the interior. They belong to about 40 tribes and speak as many languages, though they fall into the six main stocks of: Mandingos, who are Mohammedans; Gola, Kpwezi, Gissi, Kru, and Greboes. The civilized inhabitants, reported at about 50,000, live along the coast, speak English, and are industrious. Capital, Monrovia, with 6000 inhabitants (including Krutown). The ports of entry are Monrovia, Robertsport, Marshall, Grand Bassa, Buchanan, River Cess, Liberian Gene; Saywolu, Greenville, Nana Cru, Grand Cess, Sasstown, Harper, Kablake, Half Cavalla, and Webó.

PRODUCTION. Agriculture, mining, and industrial resources are comparatively undeveloped. Although the soil is very fertile, cultivation is backward. Cacao and cotton are produced in small quantities, but the staple product is native coffee. Other products include: Piassava fibre, palm oil, palm kernels, chillies, beniseed, anatto seed, rice, beeswax, and tortoise shell. The mineral resources include: Gold, copper, tin, zinc, monazite, lead, corundum, lignite, and iron. The last named is worked by natives. Some diamonds have been found.

COMMERCE. Trade statistics for Liberia are very meagre. In 1925 the value of imports was \$2,115,021 and of exports \$1,911,053. In 1927 the imports from the United Kingdom were valued \$186,313 and exports to the United Kingdom, \$61,106. The chief exports are coffee, cacao, palm

kernels, piassava fibre, palm oil, ivory, rubber, and camwood. The chief imports are rice, cottons, haberdashery, salt, provisions, arms and ammunition, hardware, tobacco, ready-made clothing, glass and earthenware, rum, gin, building timber, dried and preserved fish, and beads.

FINANCE. The budget for 1925-26 provided revenues of \$962,570 and expenditures of \$939,978. The public debt is slightly in excess of \$2,000,000.

COMMUNICATIONS. In 1928 there were no railways of any kind, and only about 250 miles of roads fit for motor traffic. Ox-carts are the chief means of conveyance, although the use of motors has commenced. A wireless station functions at Monrovia, and there is direct cable communication with Europe and America.

GOVERNMENT. The constitution is modeled after that of the United States. Under it executive power is vested in the President, who is assisted by a council of six ministers, and legislative power in the Congress made up of the Senate and House of Representatives. Qualifications for the franchise are Negro blood and ownership of land; although the natives are not disfranchised, they take no part in political affairs. The official language of the administration is English. President in 1928, Charles D. B. King (for the term 1928-1932); vice president, Allen N. Yancy.

HISTORY. The question of the Firestone rubber concession played a prominent part in Liberia's history during the year. As reported in the *Journal of Commerce* (New York) President King of Liberia came to the defense of the Firestone concession in his annual address before the Liberian Legislature on October 18, in which he declared that the most cordial relations exist between his Government and the company, and that American assistance in the financial administration of Liberian affairs was "not unsolicited." This statement of President King was undoubtedly occasioned by the charges made by Prof. Raymond L. Buell, of Harvard University, to the effect that Herbert Hoover's attack on the British rubber monopoly had inspired Firestone interests in seeking the Liberian concession and that the State Department had used measures falling little short of coercion in getting Liberia to accept the terms of the concession. These charges were denied by the State Department at the time, officials declaring that Mr. Hoover had nothing to do with the granting of the Firestone concession. Officials denied charges that the State Department had brought any pressure to bear on Liberia to accept the Firestone terms, and declared that the concession was not in any sense a monopoly, embracing only about 4 per cent of Liberian territory.

LIBRARY ASSOCIATION, AMERICAN. The official organization of librarians in the United States and Canada founded for the purpose of promoting library service and librarianship. In 1876 its membership was 103, and in 1928 it was over 11,000. The activities of the association are carried on by its officers; by its 66 voluntary committees engaged in studying the problems of book buying, book selection, cataloging, library work with the blind, and the foreign born, etc.: by its boards; by hundreds of volunteer workers; and by the members of the Headquarters staff, which numbered more than 60 in 1928, including the executive assistants to the A. L. A. Committee on Library Extension, the

Board on the Library and Adult Education, and the Board of Education for Librarianship.

The association published books and pamphlets on library work, buying lists for libraries, etc. Over 1,000,000 copies of A. L. A. publications were distributed during 1928. Most of these were sold. Important publications of the year were *Anniversaries and Holidays*, by Mary E. Hazeltine; *School Library Yearbook*, No. 2; *Public Library Administration*, by John Adams Lowe; *Code for Classifiers*, by W. L. Merrill, and *Periodicals for the Small Library*, by Frank K. Walter. The association also published seven *Reading with a Purpose* courses in 1928, each of which was written by a specialist. Each course consists of an essay, followed by a list of four or five books recommended to the reader in case he wishes to read further on the subject. Two periodicals are issued: the *Bulletin of the American Library Association*, a monthly publication which includes the conference *Proceedings* and the *Handbook*, and the *Booklist*, issued 10 times a year, as a guide to the selection and purchase of current books.

The fiftieth annual meeting of the association held in West Baden, Ind., May 28-June 2, was attended by 1200 members. The John Newbery Medal awarded annually by the Children's Librarians Section of the A. L. A. for the most distinguished children's book of the year written by an American author was given to Dhan Gopal Mukerji for his *Gay-Neck*. The usual meetings of librarians of children's, college, school, public, and hospital libraries were held. There were round tables on adult education, small libraries, library work with the blind and the foreign born, library extension, and religious books. The presence of six Mexican librarians appointed by the Secretary of Education of Mexico was the occasion for a discussion of Mexican libraries. These delegates, meeting with members of the A. L. A. boards and committees, passed resolutions providing for an exchange of publications, library personnel, and bibliographical information, the translation into Spanish of American works on library practice and the publication by the Ministry of Education of Mexico of a monthly list of all government and private publications printed in Mexico. Both before and after the conference the delegates visited a number of representative libraries.

LIBRARY PROGRESS. Progress was made during the year in the school library movements, particularly in the South where new standards for high-school libraries were adopted by the Association of Colleges and Secondary Schools of the Southern States. These standards state that "books should be procured in proportion to the size of the enrollment, that adequate quarters and equipment should be provided, that librarians familiar with the purposes of the curriculum and trained in library technique should be employed and that appropriations for new acquisitions should be made a regular part of the school budget." The standards must be complied with within three years by all of the schools on the accredited list of the Association of Colleges and Secondary Schools of the Southern States.

Circulation figures for the year were not available at the time this article was written, but a questionnaire sent by the association to a number of representative libraries revealed a considerable increase over former years. A report from the Chicago Library, for example, showed that

there was an increase of nearly 900,000 items for the first nine months of 1928 over the corresponding months in 1927. The number of county libraries established in the rural districts during the year was encouraging. They were fifteen in number, making a total of 265 in existence in the United States at the end of the year. A demonstration of a county library system which was retarded because of the Mississippi floods was continued by means of a grant of \$35,000 from the Carnegie Corporation.

The library schools already in existence before 1928 were either not able to accommodate the number of students wishing to make librarianship their profession or were not so situated geographically as to be easily accessible to students in certain parts of this country; therefore, in 1928 six new schools were established. There were nearly 1000 students registered for the school year 1927-28 in the 15 library schools accredited by the American Library Association Board of Education for Librarianship. A notable event of the year was the opening of the University of Chicago Library School, the first library school in the country to be devoted exclusively to graduate work in library science.

Libraries have been coöperating with other educational agencies in the adult education movement. Twenty-five of the larger libraries have established adult education departments, or have a "reader's adviser" whose work it is to become acquainted with the individual reader's book problems and, if necessary, to compile lists of books specifically for him. The American Library Association for the past few years has been publishing a series of reading courses, *Reading with a Purpose* (see under LIBRARY ASSOCIATION, AMERICAN above.)

A notable and highly useful bibliography was finished during 1927 and distributed in 1928. Its title is the *Union List of Serials in the Libraries of the United States and Canada*. The work includes an entry for over 75,000 titles of serials and locates holdings in over 225 American libraries. It was edited under the care of a committee of the American Library Association and involved nearly six years of labor. Sixteen copies of the *List* were printed, some on rag stock, some on sulphite stock, and sent to libraries in various parts of the country to be used and then returned, and the paper was to be tested for its wearing quality.

A number of American librarians were in foreign countries for professional reasons during the year: W. W. Bishop, librarian of the University of Michigan Library, J. C. M. Hanson, of the University of Chicago Libraries, and Charles Martel, chief of the Cataloging Division of the Library of Congress, at the request of Vatican Library authorities and by means of a grant from the Carnegie Endowment for International Peace spent several months at the Vatican Library studying the catalogue and making suggestions for its enlargement and revision and conferring about the Vatican collection of printed books and incunabula. Milton Ferguson, of the California State Library, and S. A. Pitt, of the Glasgow, Scotland, Library, were sent to South Africa to make a survey of library conditions for the Carnegie Corporation of New York.

A number of large sums of money were either given or voted for libraries and library work in 1928, including: \$1,100,000 worth of stock which was voted to help complete the Central Library

Building in Brooklyn; a municipal loan of \$3,000,000 for a new central building for the Enoch Pratt Free Library at Baltimore; a bequest from Payne Whitney of over \$6,000,000 to the New York Public Library; a fund of \$500,000 pledged by the trustees of Lehigh University for the building of an addition to the University Library; the gift of a cultural reading room the A. F. Morrison Memorial Library made to the University of California; a gift of their residence by Mr. and Mrs. Samuel Rauh to be used as a branch of the Indianapolis Public Library; and \$50,000 given by the Hon. David A. Boody for the benefit of employees of the Brooklyn Public Library. A grant of \$25,000 was made through the A. L. A. Committee on Library Extension by the Carnegie Corporation for library relief in the districts suffering losses from the floods along the Mississippi Valley and in Vermont.

New buildings either begun or completed during the year were the Knox College Library in Galesburg, Illinois, completed at a cost of \$200,000; the Montiel Regional Branch in Detroit, completed at a cost of over \$230,000; the Electra C. Doren Branch of the Dayton, Ohio, Public Library; the Public Library of Bloomfield, New Jersey; the Queens Borough Public Library in New York under construction at a cost of over \$1,000,000; the Pullman Branch of the Public Library in Chicago, Illinois; the Sterling Memorial Library at Yale University; the California State Library; the Richland Parish Library, Louisiana (county library); the Warren Free Public Library, Warren, Maine, completed at a cost of \$20,000; the Cortland, New York, Free Library; the Jones Library in Amherst, Massachusetts; and the Hoyt Library in Kingston, Pennsylvania.

Among the libraries which were making plans to begin work on new buildings were the Richmond, Virginia, Public Library, the Enoch Pratt Free Library, and the Cincinnati, Ohio, Public Library.

LIBYA. The name of a former Italian colony on the north coast of Africa. In 1919 for administrative and military purposes, it was divided into Cyrenaica and Tripolitania. See articles under these titles.

LICHNOWSKY, KARL MAX VON, PRINCE. Former German diplomat and ambassador of the German Emperor at the Court of St. James's at the outbreak of the World War, died on his estate near Breslau, Silesia, February 27. He was born at Kreuzenort, Silesia, Mar. 8, 1860. Lichnowsky held a commission in the Prussian Hussars of the Guard before entering the German foreign service in 1884. He served for about twenty years at various embassies and legations in Europe and his promotion was rapid, for at 34 he was counselor of embassy and at 39 he held the rank of minister. In 1904, after the death of his father, he retired from the diplomatic service, but in 1912 he was appointed ambassador to London. There he worked for the establishment of more friendly relations between Germany and Great Britain. In the days immediately preceding the beginning of hostilities, at the beginning of August, 1914, he endeavored, by every means within his power, to avert the War, and on its outbreak left London and went into retirement in Germany. It was currently asserted that the Berlin Foreign Office made of him little more than a figurehead, and that the real

ambassador was Herr von Kühlmann, officially counselor of embassy. In his retirement Lichnowsky wrote his account of the origin of the War; it was not intended for publication, but extracts appeared in a Swedish newspaper in March, 1918, and shortly afterward were published in book form. In this he brought serious charges against Germany. The book made a great sensation and provoked anger in Germany. Feeling ran high against the author and he was expelled from the upper house of the Prussian Diet. He found it advisable to leave his Silesian estate and live in Switzerland until after the downfall of the German Empire and the establishment of the Republic. Ludendorff urged that proceedings be taken against Lichnowsky, but nothing was done. Not long before his death Lichnowsky completed *Heading for the Abyss* (London, Constable, 1928) a work which commanded much attention from historians of the World War and from critics. It gives his opinions of the events which led up to the War.

LIFE INSURANCE. See **INSURANCE.**

LIGHTHOUSES. U. S. LIGHTHOUSE SERVICE.

Radiobeacons. This important and useful aid to navigation, to name which a new word had been coined, began in 1925 on Lake Huron and by 1928 embraced 55 radiobeacon broadcasting stations in the United States. Four times each day, regardless of weather conditions, they send signals which can be used by ships equipped with the simple receiving coil, or radio compass, to check up on their position. During fog, snowstorms, or thick weather the signal is continuous. A wave length near 1000 meters was first used so as to prevent interference with ordinary broadcasting, but since late in 1927 the lengths have been varied between 950 and 1050 at different stations and the signals have also been varied so as to make identification of the sending station, usually a lighthouse or lightship, a simple matter.

LIGHTHOUSES. The importance of lights for Great Lakes navigation is illustrated by the fact that several new lighthouses and beacons were put in service on the Great Lakes in 1928.

Lansing Shoals, Michigan. Lightship No. 98 at the northern end of Lake Michigan was replaced by a primary light- and flag-signal station which was placed in service on Oct. 6, 1928. A similar project was under way at Poe Reef, Michigan. The Lansing Shoals light was built by filling caissons, made on shore and towed into position, with concrete and protecting them from undermining with rip rap fill on the outside. A concrete slab 74 by 74 ft. and 8 ft. thick over the caissons finishes the base for a concrete building and tower built over a steel frame. The total cost was about \$200,000.

Martin Reef Lighthouse, Lake Huron. By the construction of a lighthouse to replace a lightship, the U. S. Lighthouse Service reduced annual expenses and established a fixed light not subject to storms, and especially the ice conditions, which often made it impossible, in early spring or late fall, to maintain a ship on the Martin Reef at the northern end of Lake Huron, eight miles off shore. The tower, 25 ft. square and over 70 ft. high, is founded on a heavy concrete base the top of which is 18 ft. above water and 64 ft. square in plan. The timber crib on which the base rests in about 6 ft. of water was built on shore and towed into position.

The lighthouse was completed at a cost of \$112,000.

AIRWAYS LIGHTING. Progress was made on this new problem and about 2450 miles of airways were lighted during the fiscal year 1927-28, and 520 aids to air navigation established. The total had become 5877 miles lighted and 1275 lights in operation. A new 24-inch revolving beacon light giving a 12,000-candle-power fan-shaped zenith light extending in a vertical plane from the main beam and providing a short range light for planes maneuvering for landings was developed. Special flashing beacons, illuminated wind cones, which show wind direction at night, field boundary markers and lights, a weather-signaling system, and ceiling-height indicators were in use and indicate the interesting trend of this important development.

TUBBATAHA REEF. The romance of the isolated "keeper of the light" is well illustrated in this station on a small island of the Sulu Sea, 90 miles from Palawan Island, the nearest large land mass of the Philippines. A group of structures consisting of concrete houses for the little colony of three keepers, two boatmen and their families, a diminutive power plant for the radio, cisterns for fresh water, and a storehouse for oil, with, 120 feet above, at the top of a slender steel tower, a third-order light, mark this station. It took the builders 12 days to land men and material on the reef; they were overcome by extreme heat during the day and extreme cold at night, and with tropical storms at intervals, which required a sea wall to protect this precarious foothold of man in the midst of water. Since May 11 the new light has served and will continue to serve shipping between Hong Kong, Manila, and Australia. Philippine lighthouse affairs are not under the U. S. Lighthouse Service but are managed by the Philippine Government.

FRENCH LIGHTHOUSE SERVICE. One of the most interesting developments in lighthouse work in recent years was the evolution of electric lighting

in French works. The French Lighthouse Service has long been noted for its excellence and its installations are watched with interest. The systematic application of electricity in lighthouse work in France dates from 1882, when it was proposed to electrify no less than 46 of the leading lights along a seaboard of 1600 miles. It was hoped that these lights, at intervals of 35 miles, would each have their luminous ranges cutting each other so that an observer would nowhere be out of range. The number, for reasons of economy, was later reduced to six and in 1928 14 were so operated. The first installations consisted in arc lights operated by alternating current dynamos driven by steam engines of 12 to 18 horse power. More recently, from 1922 to date, the development has been characterized by the introduction of high-candle-power incandescent lamps running up to 5000 and 10,000 watts. The plan of using outside, local sources of supply, with the lighthouse electric generating plants simply standing by in case of any interruption or failure of the outside current, has also been followed wherever possible.

The most interesting feature in the lighting development, however, was the introduction of the so-called lightning flash, or *feux éclair*, system. By rapid rotation of the revolving drum, made possible largely by the clever use of a mercury-bearing support for the apparatus, flashes of $\frac{1}{10}$ second in duration at first at intervals of 10 seconds were secured and the intensity of the flashes was increased from 1 to $5\frac{1}{2}$ million candle power. Later developments reduced the interval to five seconds and increased the intensity to 25 million candle power. An interesting summary in *Engineering* (London, July 6, 1928) calls attention to the fact that this lightning flash system cannot be used in England, where a flash duration of as much as five seconds is used, due to the heavier atmospheric conditions prevailing on the English coast and the need for both a longer period for perception as well as

UNITED STATES LIGHTHOUSE SERVICE—SUMMARY OF AIDS TO NAVIGATION AND CHANGES DURING FISCAL YEAR

Class	1928				Total, June 30—	
	Estab- lished	Discon- tinued	In- crease	De- crease	1927	1928
Lighted aids:						
Lights (other than minor)	126	41	85	..	2,163	2,248
Lightship stations	1	..	1	..	45	46
Gas buoys	88	51	37	..	517	554
Gas buoys, with whistles and bells	33	12	21	..	313	334
Minor lights	308	267	41	..	3,351	3,392
Float lights	4	18	..	14	201	187
Total lighted aids	560	389	171	..	6,590	6,761
Fog signals:						
Radiobeacons	18	..	18	..	37	55
Sound fog signals (air)	9	5	4	..	549	553
Submarine fog signals	1	2	..	1	38	37
Gas buoys, with whistles and bells	33	12	21	..	313	334
Whistling buoys, unlighted	11	1	..	..	81	81
Bell buoys, unlighted	11	5	6	..	247	253
Total fog signals	73	25	48	..	1,265	1,313
Unlighted aids:						
Buoys	465	420	45	..	7,619	7,664
Day beacons	195	205	..	10	3,213	3,203
Total	660	625	35	..	10,832	10,867
Grand total*	1,260	1,027	233	..	18,374	18,607
Aids to air navigation .....	..	..	..	..	755	1,263

* Gas buoys with whistles and bells are counted only once in the grand total.

† Not included in further statistics of this report. The number of aids shown includes beacon lights, radio-beacon stations, and radio communication stations only. There were also 3593 boundary lights and 727 obstruction lights in operation June 30, 1928.

intensive illumination of the nearer sea rather than the overhead long-distance flashes to the horizon used satisfactorily in French practice because of better weather conditions on the French coast.

FIRST AFRICAN RADIOBEACON. Spain established a radiobeacon at Cape Tres Forcas, Morocco. Although this is the first radiobeacon on the African coast, it was expected that another would be installed at the internationally maintained light-house at Cape Spartel, south of the entrance to the Mediterranean.

LIGHTSHIPS. See **LIGHTHOUSES.**

LIGNITE. See **COAL.**

LIMA, MANOEL DE OLIVEIRA. Former Brazilian diplomat, historian, and publicist of international note, died at Washington, D. C., March 24. He was born at Pernambuco, Brazil, Dec. 25, 1867, and was graduated from the Faculty of Letters and Philosophy, Lisbon, Portugal. His diplomatic career began in 1890. From 1896 to 1900 he was first secretary to the Brazilian Embassy in Washington, and he served also in various countries of Europe and South America, and in Japan. He was visiting professor at Harvard University, 1915-16, and lectured at other American and European universities. From 1923 until his death he was professor of international law at the Catholic University, Washington, and he donated to the university his library of 40,000 volumes. He was a member of the academies of letters of Brazil, Portugal, and Spain, and of many other learned societies. His writings included various historical works in French, Spanish, and Portuguese.

LINCOLNSHIRE, FIRST MARQUIS OF. (CHARLES ROBERT WYNN-CARRINGTON). English statesman, died at High Wycombe, England, June 13. Born May 16, 1843, he was educated at Eton and at Trinity College, Cambridge (1861), and after a short period of service in the Royal Horse Guards entered Parliament as member for High Wycombe, 1865-68. In the latter year he went to the House of Lords, on inheriting the title of Baron Carrington. His course in Parliament was marked by hearty support of Liberal measures. He was especially interested in the nationalization of the church lands, to provide small holdings for workers. He was captain of the Royal Bodyguard, 1881-85; Governor of New South Wales, 1885-90; Lord Chamberlain of the Household, 1892-95; President of the Board of Agriculture, 1905-11, and Lord Privy Seal, 1911. From 1915 to 1923 he was lord lieutenant of Buckinghamshire. In 1895 Lord Carrington was advanced in peerage, as Earl Carrington and Viscount Wendover, and in 1912 he became the first Marquis of Lincolnshire. He was joint hereditary lord great chamberlain of England. He was made a Knight of the Garter in 1906 and was also the possessor of the Grand Cross of the Order of St. Michael and St. George.

LINDBERGH, COLONEL CHARLES A. See **AERONAUTICS.**

LINGUISTIC STUDIES. See **ANTHROPOLOGY; PHILOLOGY, MODERN.**

LINSEED. See **FLAX.**

LIONS CLUBS, INTERNATIONAL ASSOCIATION OF. An organization of business men's clubs united in one association for the purpose of promoting good government and good citizenship, encouraging efficiency, and promoting high ethical standards in business and in the professions. In 1917 the Business Circle of Chicago is-

sued a call to approximately 150 business organizations, inviting them to send representatives to a meeting in Chicago on June 7. More than 20 delegates, representing 50 clubs, attended this meeting and voted to form the Association of Lions Clubs with the understanding that each club was to retain its own name. Additional Lions Clubs have been organized by choosing one man from each business or profession in the community.

On June 30, 1928, the total number of clubs was 1458 and membership, 60,859. At the 1928 convention, held July 10-13 in Des Moines, Iowa, the following officers for 1928-29 were elected: President, Ben A. Ruffin, 1005 Times Dispatch Building, Richmond, Va.; immediate past president, Irving L. Camp, Johnstown, Pa.; vice presidents (in order), Ray L. Riley, Sacramento, Calif.; Earle W. Hodges, New York City, and Julien C. Hyer, Fort Worth, Texas. Melvin Jones, Chicago, was secretary general. Louisville, Ky., was selected as the next convention city. International headquarters are in the McCormick Building, 332 South Michigan Avenue, Chicago, Illinois. *The Lion* is the official magazine of the Association.

LITERATURE, ENGLISH AND AMERICAN. During 1928 the book-club movement in America, noted in the 1928 YEAR BOOK, continued to spread. Not only was there an addition to the organizations selecting from the whole field of literature but there were also organized clubs specializing in books of poetry, religion, and crime. The Book League of America, the new organization in the general field, undertook to distribute twelve new books a year in magazine format, and subscribers were allowed no choice. But at the same time the subscriber was permitted to choose during the year a certain number of books from a list of established classics. How successful this variation of the book-club scheme would be it was impossible to say at the close of 1928.

Publishers and booksellers seemed to believe that the various book clubs had done their business good; at least, very little complaint was heard from them, although an association of American booksellers tried to compete with the book clubs by announcing a monthly recommendation of its own. On the whole, the movement seemed to have had a healthy influence on both the trade and the art of publishing. The level of books selected by all the clubs generally was high, and some worthy books would certainly not have received the attention they deserved without the support of the book club.

A notable tendency in American publishing, though now of some years' growth, should also be spoken of. That is the obvious desire of many publishers to produce striking examples of book-making, in typography, illustration, page design, dust cover, binding, etc. In this the university presses have undoubtedly led the way. Also the American Library Association's practice of selecting the fifty best-made books of the previous year has stimulated the practice. Even reviewers often comment upon a book's make-up. Undoubtedly, this tendency is a reverberation of the contemporary craze for collecting modern books in first editions, a fad which may have its elements of falsity and puffery, but which in this respect, at least, brings good with it.

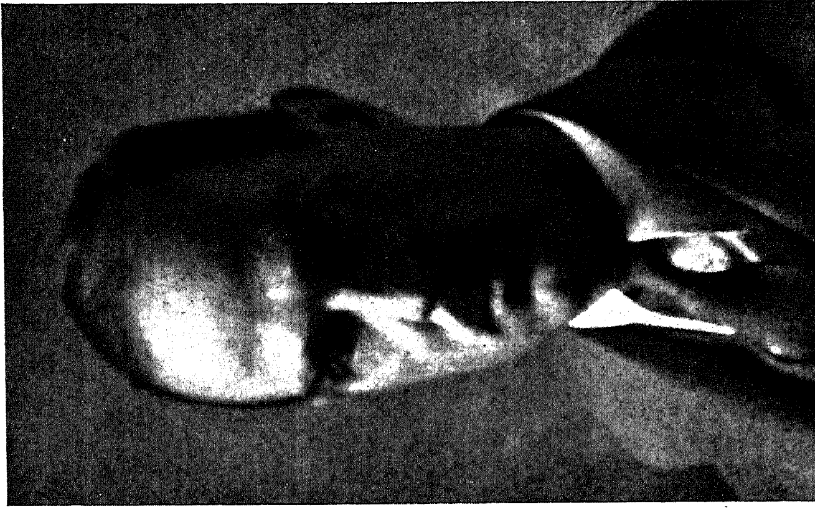
FICTION. Though the general level of attainment was not undistinguished, there was no



STEPHEN VINCENT BENÉT



SIGRID UNDSÆT
of Norway
Winner of Nobel Prize in Literature for 1928
THREE AUTHORS PROMINENT IN 1928



THORNTON WILDER

outstanding novel during 1928, no great popular success, not even a remarkable *succès d'estime*. One grand achievement, however, was finished by John Galsworthy's *Swan Song*, the last of the six novels and four short stories which make up the *Forsyte Saga*. Soames Forsyte, one of literature's most vital figures, is dead. To many people he has been, and to many more he undoubtedly will be, the great exemplar of the late Victorian era. Virginia Woolf's *Orlando* was a fantastic study of English life and literature from Elizabeth's time to our own, centred about a person who changed sex during the passage of time. Aldous Huxley mixed philosophy and fiction in *Point Counter Point*, as did Wyndham Lewis, though more wildly and bewilderingly, in *The Childermass*, part 1. *The Strange Case of Miss Annie Spragg*, by Louis Bromfield, is a mixture of abnormal psychology, mystery, and anti-religion. Cornelia James Cannon's *Red Rust* is a powerful study of the Western farmer's struggle for livelihood.

There were many fine novels of fantasy, such as *The Bishop's Wife*, by Robert Nathan; *Mr. Hodge and Mr. Hazard*, by Elinor Wylie; *Mr. Weston's Good Wine*, by T. F. Powys; *In the Beginning*, by Norman Douglas; *Jingling in the Wind*, by Elizabeth Madox Roberts; and *Mandrake Over the Water Carrier*, by Edward Sackville-West. Also, there was the most interesting group of historical novels in some years: "H. D.'s" *Hedylus* and Gertrude Atherton's *Vengeful Gods*, were about ancient Greece; *The Empress of Hearts*, by E. Barrington, about Marie Antoinette; *With Malice Toward None*, about Lincoln, by Honoré Willse Morrow; *King Akhnaton*, by Simeon Strunsky, which, with three books revising the Bible stories—Elmer Davis' *Giantkiller* (David) Ernest Sutherland Bates' *The Friend of Jesus* (Judas) and Murray Sheeham's *Eden*—carried satirical implications for contemporary life. Then there were Esther Forbes' *A Mirror for Witches*; Donn Byrne's *Crusade*; Eric P. Kelly's *A Trumpeter of Krakow*; Ford Madox Ford's *A Little Less Than Gods*; Louis Forgnone's *The Men of Silence*; Manfred Gottfried's *Prelude to Battle* which stood out from the rank and file.

Satirical novels included: Edith Wharton's *The Children*; H. G. Wells' *Mr. Blettsworthy on Rampole Island*; Anne Parrish's *All Kneeling*; Nelson Antrim Crawford's *A Man of Learning*; Isa Glenn's *Southern Charm*; McCready Huston's *Dear Senator*. Among romantic novels were: S. Fowler Wright's *Deluge*; Donn Byrne's *Destiny Bay*; Dale Collins' *Vanity Under the Sun*.

The great bulk of the year's work in fiction was of course in the plain old realistic tradition. Such novels as *Wintersmoon*, by Hugh Walpole; *Iron and Smoke*, by Sheila Kaye-Smith; *Bright Metal*, by T. S. Stripling; *Claire Ambler*, by Booth Tarkington; *Home to Harlem*, by Claude McKay, and *Scarlet Sister Mary*, by Julia Peterkin, both about Negro life; *Bad Girl*, by Viña Delmar; *The Bonney Family*, by Ruth Suckow; *An Artist in the Family and The Coming of the Lord*, by Sarah Gertrude Millin; *The Father*, a \$25,000 prize novel, by Katherine Holland Brown; *The Road to Heaven*, by Thomas Beer; *The Happy Mountain*, by Maristan Chapman; *The Ring Fence*, by Eden Phillpotts; *A Brood of Ducklings*, by Frank Swinnerton; *When I Grow Rich*, by Ethel Sidgwick; *A Man Can Build a House*, by Nathalie Sedgwick Colby; *The Way It*

Was with Them, by Peador O'Donnell, were perhaps outstanding.

Novels more definitely psychological were: *Daisy and Daphne*, by Rose Macaulay; *Farewell to Youth*, by Storm Jameson; *The Island Within*, by Ludwig Lewisohn; *Meat*, by Wilbur Daniel Steele; *Cranmer Paul*, by Rolf Bennett; *Dead Lovers are Faithful Lovers*, by Frances Newman; *The Withered Root*, by Rhys Davies; and *Her Knight Comes Riding*, by John V. A. Weaver. From the hundreds of mystery and detective stories the following might be selected: *The Greene Murder Case*, by S. S. Van Dine; *Mystery of the Blue Train*, by Agatha Christie; *The Dawson Pedigree*, by Dorothy Sayers; *How the Old Woman Got Home*, by M. P. Shiel; and *Cursed Be the Treasure*, by H. B. Drake.

Other important novels, harder to fit into categories, were: Upton Sinclair's *Boston*, about Sacco and Vanzetti; *This Side Idolatry*, by C. E. Bechhofer-Roberts, about Dickens; Djuna Barnes' lusty *Ryder*; Michael Arlen's *Lily Christine*; Trader Horn's *Harold the Webbed*, or *the Young Vikings*, edited by Ethelreda Lewis; *Show Girl*, by J. P. McEvoy; *But Gentlemen Marry Brunettes*, by Anita Loos; Stark Young's *The Torch Flare*; Clemence Dane's *The Babyons*; Liam O'Flaherty's *The Assassin*; Norman Davey's *Judgment Day*; Margot Asquith's *Octavia*; E. M. Delafield's *The Way Things Are*.

Among volumes of short stories, James Stephens' *Etched in Moonlight* stood out for beauty, sadness, and humor. Other good volumes were: *A Quartette of Comedies*, by H. G. Wells; *The Silver Thorn*, by Hugh Walpole; *Goodbye, Wisconsin*, by Glenway Wescott; *Quiet Cities*, by Joseph Hergesheimer; *Action*, by C. E. Montague; *Silver Circus*, by A. E. Coppard; *Black Sparta*, ancient life, by Naomi Mitchison; *Costumes by Eros*, by Conrad Aiken; *The Woman Who Rode Away*, by D. H. Lawrence; *Wide Fields*, by Paul Green; *The Crime of Dr. Garine*, by Boris Sokoloff; *The House with the Echo*, by T. F. Powys.

Interesting translated fiction included: Arnold Zweig's *The Case of Sergeant Grischa*; Sigrid Undset's *The Ape*, by Arthur G. Chater; Marcel Proust's *Cities of the Plain*, by C. K. Scott-Moncrief; Felix Salten's *Bambi*; Knut Hamsun's *The Women at the Pump*; Andreas Haukland's *The Norns are Spinning*; Lady Murasaki's *Blue Trousers*, the fourth and last volume of *The Tale of Genji*, by Arthur Wales; Julian Green's *The Closed Garden*, by Henry Longan Stuart; Fritz von Unruh's *The Way of Sacrifice*; Stefan Zeromski's *Ashes*, by Helen Zand; Arthur Schnitzler's *Theresa*; Hermann Sudermann's *The Mad Professor*.

POETRY. 1928 was an exceptionally fine and rich year in poetry, perhaps the best since the War. Thomas Hardy's posthumous volume, *Winter Words*, was full of deep vitality. Stephen Vincent Benet's *John Brown's Body* was a panoramic portrayal of the Civil War. Elinor Wylie showed her delicate charm in *Trivial Breath*. Robert Frost's *West-Running Brook* was pure song. Edna St. Vincent Millay showed progress in *The Buck in the Snow*. W. B. Drayton Henderson aspired greatly in an astronomical epic, *The New Argonautica*. W. B. Yeats showed himself growing gracefully older in *The Tower*. John Masefield continued with Arthurian themes in *Midsummer Night*. Among other noteworthy volumes were: Carl Sandburg's *Good Morning, America*; Hum-

bert Wolfe's *Cursory Rhymes*; Dorothy Parker's *Sunset Gun*; Samuel Hoffenstein's *Poems in Praise of Practically Nothing*; Archibald MacLeish's *The Hamlet of A. Macleish*; Robinson Jeffers' *Caudor and Other Poems*; Joseph Moncure March's *The Set-Up and The Wild Party*; Leonard Bacon's *The Legend of Quincibald*; William Ellery Leonard's *A Son of Earth*; Sylvia Townsend Warner's *Time Importuned*; Alexander Laing's *Fool's Errand*; Edmund Blunden's *Retreat*; Louis Untermeyer's *Burning Bush*; Robert Hillyer's *The Seventh Hill*; Nathalia Crane's *Venus Invisible*; Don Marquis's *Love Sonnets of a Cave Man*; Edgar Lee Masters' *Jack Kelso*; Clinch Calkins' *Poems*; Lee Wilson Dodd's *The Great Enlightenment*; Theodore Maynard's *Exile*; James Whaler's *Hale's Pond*; Abbie Huston Evans' *Outcrop*; Sherard Vines' *Triforium*; Charles Malam's *Spring Flooding*.

DRAMA. The event of the year, perhaps, because it was twenty-four years late, was the publication of Sir James M. Barrie's *Peter Pan*. The charm of this famous play was at last caught in book covers. Very different and very modern was Eugene O'Neill's nine-act *Strange Interlude*, but perhaps these two plays alone made 1928 noteworthy. But there were many more: *His Majesty*, by Harley Granville Barker; *The Ivory Door*, by A. A. Milne; *Porgy*, by Dorothy and DuBose Heyward; *The Front Page*, by Ben Hecht and Charles MacArthur; *Coquette*, by George Abbott and Ann Preston Bridgers; *Behold the Bridegroom*, by George Kelly; *The Silver Tassie*, by Sean O'Casey; *The Sacred Flame*, by W. Somerset Maugham; *The Royal Family*, by George S. Kaufman and Edna Ferber; *Mr. Moneybags*, by Channing Pollock; *The Queen's Husband*, by Robert E. Sherwood; *Three Last Plays*, by Lady Gregory; *Plays*, by Lennox Robinson; *The Return of the Soldier*, by John Van Druten; *Three Plays*, by H. R. Lenormand; *The Phantom Lover*, by George Kaiser; *Mr. Prohack*, by Arnold Bennett and Edward Knoblock; *Maya*, by Simon Gantillon, translated by Ernest Boyd; *The Plays of Noel Coward*; *Olympia*, by Ferenc Molnar, translated by Sidney Howard; *Kentucky Mountain Fantasies*, by Percy Mackaye; *Four Plays*, by Serafin and Joaquin Alvarez-Quintero, translated by Helen and Harley Granville Barker; *The Patriot*, by Alfred Neumann, translated by Ashley Dukes; *All at Sea*, by Osbert and Sacheverell Sitwell; *The One-Act Plays of Luigi Pirandello*; and a collection, *Fifty More Contemporary One-Act Plays*, by Frank Shay.

ESSAYS. The appearance of a new volume from Max Beerbohm is always important, as was *A Variety of Things*, in 1928. A number of collections were primarily sociological in intention, such as: *Whither Mankind?* edited by Charles A. Beard; *The Great American Band Wagon*, by Charles Merz; *The Man Who Knew Coolidge*, by Sinclair Lewis; *Strange Bedfellows*, by Silas Bent; *The Inquiring Mind*, by Zechariah Chafee, Jr.; *On Doing the Right Thing*, by Albert Jay Nock; *Paris Salons, Cafés, Studios*, by Sisley Huddleston; *The Post-War Mind of Germany*, by C. H. Herford; *The Star Spangled Manner*, by Beverley Nichols; *Portage, Wisconsin*, by Zona Gale. Humorous essays included: *20,000 Leagues Under the Sea*, or *David Copperfield*, by Robert Benchley; *Short Circuits*, by Stephen Leacock; *The Unintentional Charm of Men*, by Frances Lester Warner; *Mrs. Fisher, or the Future of Humor*, by

Robert Graves; *A Conversation with an Angel*, by Hilaire Belloc; *Meaning No Offense*, by John Riddell.

Primarily literary were: *The Hogarth Essays*; *Some Modern Poets and Other Essays*, by Edward Davison; *Spirit of Delight*, by George McLean Harper; *The Delight of Great Books*, by John Erskine; *A London Bookman*, by Frank Swinnerston. Among biographical essays were: Philip Guedalla's *Bonnet and Shawl and Portraits of the New Century*, by E. T. Raymond. Noteworthy philosophical essays were: Bertrand Russell's *Skeptical Essays*; Montague Summers' *Essays in Petto*. Other essay books were: Rudyard Kipling's *A Book of Words*; Samuel McChord Crothers' *The Thought-Broker*; David McCord's *Strababout*; Walter S. Hinchman's *Pedestrian Papers*; H. W. Nevins's *Last Changes, Last Chances*.

CRITICISM AND THE HISTORY OF LITERATURE. The general works in this field were of great quantity and high quality, as is shown by: *American Criticism*, by Norman Foerster; *For Lancelet Andrevos: Essays on Style and Order*, by T. S. Eliot; *Pomona, or the Future of English*, by Basil de Selincourt; *The Strange Necessity*, by Rebecca West; *Modern English in the Making*, by George H. McKnight; *The Demon of the Absolute*, by Paul Elmer More; *Tools and the Man*, by Helen D. Lockwood; *Beauty and the Beast*, by Joseph Gordon MacLeod; *Medieval Rhetoric and Poetic*, by Charles Sears Baldwin; *Destinations*, by Gorham B. Munson; *Contemporary American Authors*, edited by J. C. Squire; *Spokesmen*, by T. K. Whipple; *English Prose Style*, by Herbert Read.

Concerned with fiction and novelists were: Van Meter Ames' *Aesthetics of the Novel*; Edwin Muir's *The Structure of the Novel*; Hoxie Neale Fairchild's *The Noble Savage, a Study in Romantic Naturalism*; J. D. Beresford's *Writing Aloud*; Samuel C. Chew's *Thomas Hardy*; G. K. Chesterton's *Robert Louis Stevenson*; John Caruthers' *Scheherazade, or the Future of the Novel*. About poetry: W. P. Ker's *Form and Style in Poetry*; H. J. C. Grierson's *Lyrical Poetry from Blake to Hardy*; George H. W. Rylands' *Words and Poetry*; Humbert Wolfe's *Dialogues and Monologues*; W. W. Lawrence's *Beowulf and Epic Tradition*. Dealing with drama and the theatre: Ashley Dukes' *The World to Play With*; Sheldon Cheney's *Stage Decoration*; Alexander Woollcott's *Going to Pieces*; F. Melian Stawell and G. Lowes Dickinson's *Goethe and Faust*. Shakespeare is considered in: Allardyce Nicoll's *Studies in Shakespeare*; Hubert Griffiths' *Iconoclastes, or the Future of Shakespeare*; David Nichol Smith's *Shakespeare in the Eighteenth Century*. Also, Harold Nicolson published *The Development of English Biography*.

During 1928, the great *Oxford English Dictionary* was completed, after more than forty years of effort.

BIOGRAPHY AND AUTOBIOGRAPHY. The vogue for picturesque Americans in biography continued during 1928, as is shown by: Richard J. Walsh and Milton S. Salisbury's *The Making of Bufalo Bill*; Ross Santee's *Cowboy*; Stanley Vestal's *Kit Carson*; Herbert R. Mayes' *Alger*; Harold Kellock's *Houdini* and Parson Weems of the *Cherry Tree*; Allan Nevins' *Fremont*; Emalie Sachs' *The Terrible Siren*, (Victoria Woodhull); Don Seitz' *The James Gordon Bennetts*; and among autobiographies: Isadora Duncan's *My Life*; Chief Buffalo Child Long Lance's *Long*

Lance; and Hilda Rose's *The Stump Farm*. Among biographies of American political figures Albert J. Beveridge's *Abraham Lincoln* was a remarkable achievement. Others were: volumes iii and iv of *The Intimate Papers of Colonel House*, edited by Charles Seymour; William Allen White's *Masks in a Pageant*; Burton J. Hendrick's *The Training of an American: the Earlier Life and Letters of Walter Hines Page, 1855-1913*; *This Man Adams*, by Samuel McCoy; Robert W. Winston's *Andrew Johnson, Plebeian and Patriot*; Honoré Willis Morrow's *Mary Todd Lincoln*; and James Benjamin Wilbur's *Ira Allen, Founder of Vermont*.

Biographies of American literary figures almost disappeared, but there were: *The Letters of William Roscoe Thayer*, edited by Charles Downer Hazen; *Upton Sinclair*, by Floyd Dell; and *May Alcott*, by Caroline Ticknor. Also, among autobiographies: Booth Tarkington's *The World Does Move*; Hamlin Garland's *Back Trailers from the Middle Border*; and Gamaliel Bradford's *Life and I*.

But the biographical event of the year was English, the publication of Lytton Strachey's *Elizabeth and Essex*. The volume builds higher the already tremendous edifice of its author's reputation. About other English political personages: the Earl of Oxford and Asquith's *Memories and Reflections 1852-1927*; Lord Beaverbrook's *Politicians and the War, 1914-1916*; "Ephesian's" Winston Churchill; volume iii of the second series of the *Letters of Queen Victoria*, edited by George Earle Buckle; Nellie M. Waterson's *Mary II, Queen of England*; James Sykes' *Mary Anne Disraeli*; volume iii of the Earl of Ronaldshay's *Life of Lord Curzon*; W. H. Edwards' *The Tragedy of Edward VII*; John Drinkwater's *Charles James Fox*; B. M. Ward's *The Seventeenth Earl of Oxford*, the latest candidate for Shakespeare's honors; Oliver Brett's *Wellington*; T. M. Healy's *Letters and Leaders of My Day*; Llewelyn Powys' *Henry Hudson*.

English literary persons were dealt with in: the delightful *Early Life of Thomas Hardy*, by Florence Emily Hardy; *Anthony Trollope*, by Hugh Walpole; *Dr. Arnold of Rugby*, by Arnold Whitridge; *The Skull of Swift*, by Shane Leslie; *The Brownings*, by Osbert Burdett; *The Life and Private History of Emily Jane Brontë*, by Romer Wilson; *The Last Twelve Years of Joseph Conrad*, by Richard Curle; *William Cowper*, by Hugh I'Anson Fausset; *Recollections of Rossetti*, by Sir Hall Caine; *Rossetti: His Life and Works*, by Evelyn Waugh; *Havelock Ellis: Philosopher of Love*, by Houston Peterson; *Charles Dickens*, by Ralph Straus; *Sir Thomas Malory*, by Edward Hicks; *Carlyle: His Rise and Fall*, by Norwood Young; *Matthew Arnold*, by Hugh Kingsmill; *The Story of Gilbert and Sullivan*, by Isaac Goldberg; and *Naked Truth*, by Clare Sheridan.

About French people: Matthew Josephson's *Zola and His Time*; Henry Dwight Sedgwick's *Lafayette*; Joseph Delteil's *Lafayette*; translated by Jacques Le Clerc; D. B. Wyndham Lewis' *François Villon*; Dmitri Merezhkovski's *Napoleon the Man*, translated by Catherine Zvegintzov; *The Memoirs of Raymond Poincaré, 1913-1914*, translated by Sir George Arthur; T. Lucas-Dubreton's *The Fourth Musketeer, the Life of Alexandre Dumas*, translated by Maida Castel-hun Darnton; Maurice Paleologue's *The Tragical Empress, Eugénie*, translated by Hamish Miles;

R. G. Anderson's *Those Quarrelsome Bonapartes*. Other Continentals and more remote: Emil Ludwig's *Goethe*, translated by Ethel Colburn Mayne; *The Memoirs of Prince Max of Baden*, translated by W. M. Calder and C. W. H. Sutton; *The Letters of the Empress Frederick* edited by Sir Frederick Ponsonby; *The Rise and Reign of the House of Rothschild*, and *Maximilian and Charlotte of Mexico*, by Count Egon Corti; *The Modern Plutarch*, by John Cournos; *Bach*, by Charles Sanford Terry; *Schubert*, by Newman Flower; *Lenin: Thirty Years of Russia*, by Valeriu Marcu, translated by E. W. Dicks; *Rasputin*, by René Filop-Müller; *The Intimate Life of the Last Tsarina*, by Princess Catherine Radziwill; *The Discoverer* (Columbus) by André de Hevesy; *Heading for the Abyss*, by Prince Lichnowsky; *Sir Peter-Paul Rubens*, by Anthony Bertram; *Catullus and Horace*, by Tenney Frank; *My Autobiography*, by Benito Mussolini; *Leonardo the Florentine*, by Rachel Annand Taylor; *Niccolo Machiavelli, the Florentine*, by Giuseppe Prezzolini; *Asoka*, by Radhakamud Mookerji; *My War Memoirs*, by Dr. Eduard Benes, translated by Paul Selver; *The Turkish Ordeal*, by Halide Edib; *Tolstoy*, by Hugh I'Anson Fausset; and *Alexander*, by Konrad Bercovici.

Mention should also be made of a supplementary volume to the *Dictionary of National Biography*, covering personages dying 1912-1921; and the first volume of the *Dictionary of American Biography* (Abbe-Barrymore) under the editorship of Allen Johnson.

THE FINE ARTS. General works in this field included: Kenneth Clark's *The Gothic Revival*; G. G. Coulton's *Art and the Reformation*; Walter Pach's *Ananias, or the False Artist*; Paul T. Frankl's *New Dimensions*; Joseph Pijoan's *History of Art*, translated by Ralph L. Roys. About architecture were: G. H. Edgell's *The American Architecture of Today*; Fiske Kimball's *American Architecture*; *Examples of Modern French Architecture*, edited by Howard Robertson and F. R. Yerbury; *A Book of Towers and Other Buildings of Southern Europe*, by Richard Wyndham and Sacheverell Sitwell. Mr. Sitwell also published *German Baroque Art*. Other art books were: Franz Boas' *Primitive Art*; Wilhelm Worringer's *Egyptian Art*; Sir Thomas W. Arnold's *Painting in Islam*; Wilhelm Hausenstein's *Fra Angelico*, translated by Agnes Blake; Percy H. Osmond's *Paolo Veronese*; S. C. Kaines Smith's *An Outline History of Painting in Europe to the End of the 19th Century*; C. Reginald Grundy's *English Art in the 18th Century*; Douglas Percy Bliss' *A History of Wood Engraving*; *The Brothers of Giovanni della Robbia*, by Allan Marquand; *The People's Album of London Statues*, by Osbert Sitwell and Nina Hamnett; and *Meryon*, by Loys Delteil, translated by G. J. Renier.

RELIGION. Perhaps the American presidential election brought forth *Catholicism and the Modern Mind*, by Michael Williams, *Catholicism and the American Mind*, by Winfred Ernest Garrison, and *Catholicism and Christianity*, by Cecil John Cadoux. Certainly events in England resulted in the publication of Sir William Joynson-Hicks' *The Prayer Book Crisis*; and *The Conversations at Malines, 1921-1925*. Other religious books, less topical, were: *Christ and Society*, by Charles Gore; *The Religion of Jesus*, by Walter E. Bundy; *Confusion of Tongues*, by Charles W. Ferguson; *Christianity in Science*, by Frederick D.

Leete; *The Agony of Christianity*, by Miguel de Unamuno; *Studies in Early Christianity*, edited by Shirley Jackson Case; *Current Christian Thinking*, by Gerald Birney Smith; *The Story of the Ten Commandments*, by C. H. Moehlman; *The Son of Man*, by Emil Ludwig; *Our Fathers' Faith and Ours*, by David S. Schaff; *Science and the Religious Life*, by Carl Rahn; *Eutychus, or the Future of the Pulpit*, by Winifred Holtby; *Does Civilization Need Religion?* by Reinhold Niebuhr; *The Graphic Bible*, by Lewis Browne; *Confessions of a Puzzled Parson*, by Charles Fiske; *A New God for America*, by Herbert Parrish; *The Paganism in Our Christianity*, by Arthur Weigall; *The Gospel for Asia*, by Kenneth Saunders; *Methodism*, by W. Bardsley Brash; *Religions Past and Present*, by Bertram C. A. Windle; *From Abraham to Christ*, by Vernon F. Storr.

SOCIOLOGY. General sociological works included: Roland B. Dixon's *The Building of Cultures*; Pitirim Sorokin's *Contemporary Sociological Theories*; Clive Bell's *Civilization*; Harry Elmer Barnes' *Living in the Twentieth Century*; Edward Alsworth Ross' *World Drift*; J. S. MacKenzie's *Fundamental Problems of Life*; Edward R. Lewis' *America: Nation of Confusion*; Walter B. Pitkin's *Twilight of the American Mind*; *Recent Gains in American Civilization*, edited by Kirby Page; *Freedom in the Modern World*, edited by Horace M. Kallen. Dealing with sex and the family: Mary Burt Messer's *The Family in the Making*; Norman Haire's *Hymen, or the Future of Marriage*; Samuel D. Schmalhausen's *Why We Misbehave*; Willystine Goodsell's *Problems of the Family*; Charles W. Margold's *Sex Freedom and Social Control*; Margaret Mead's *Coming of Age in Samoa*. About crime: Max A. Schlapp and Edward H. Smith's *The New Criminology*; George Godwin's *Cain, or the Future of Crime*; Herbert Asbury's *The Gangs of New York*. Others: Henry Pratt Fairchild's *The Foundations of Social Life*; Salvador de Madariaga's *Englishmen, Frenchmen, Spaniards*; Julien Benda's *The Treason of the Intellectuals*, translated by Richard Aldington; Morris L. Ernst and William Seagle's *To the Pure*; E. Haldeman-Julius' *The First Hundred Million*; Gilbert Seldes' *The Stammering Century*; C. E. M. Joad's *Diogenes, or the Future of Leisure*; Albert Londres' *The Road to Buenos Aires*; Louis I. Dublin's *Health and Wealth*; Ruth S. Cavan's *Suicide*; Howard W. Odum's *Rainbow Round My Shoulder*; *The American Negro*, by Melville J. Herskovits; *High-Pressure Politics: the Story of the Anti-Saloon League*, by Peter Odegard; *Lady Godiva: the Future of Nakedness*, by John Langdon Davies; *Stentor: the Future of the Press*, by David Ockhan; *The Next Chapter*, by André Maurois.

EDUCATION. The most curious work in this field is probably the *Diary of a Communist Schoolboy*, by N. Ogniov, translated by Alexander Werth. General works included: Alfred Zimmermann's *Learning and Leadership*; Joseph A. Leighton's *Individuality and Education*; dealing with universities and colleges: Max McConn's *College or Kindergarten*; R. H. Edwards, J. M. Artman, and Galen M. Fisher's *Undergraduates*; Robert Cooley Angell's *The Campus*; Charles Franklin Thwing's *The American and the German University*; *The Effective College*, edited by Robert Lincoln Kelly; Robert C. Brooks' *Reading for Honors at Swarthmore*; Sidney Cox's

The Teaching of English. Concerned with younger students; Gwendoline Watts' *The Children's Kingdom*; Mary H. Lewis' *An Adventure with Children*; J. Howard Whitehouse's *Creative Education at an English School*; David Seabury's *Growing into Life*; Blanche C. Weil's *The Behavior of Young Children of the Same Family*; Mary Buell Sayles' *The Problem Child at Home*.

POLITICS AND INTERNATIONAL. Most striking was the number of works on India during 1928, apparently called forth by Katherine Mayo's *Mother India* of 1927; such as: *Unhappy India*, by Lajpat Rai; *Father India*, by C. S. Ranga Iyer; and *A Son of Mother India Answers*, by Dhau Gopal Mukerji. The following dealt with other nations: Raymond Leslie Buell's *Europe*, and *The Native Problem in Africa*; Marguerite Harrison's *Asia Reborn*; L. Richmond Wheeler's *The Modern Malay*; Grace Ellison's *Turkey Today*; Max Eastman's translation of Leon Trotsky's *The Real Situation in Russia*; Dorothy Thompson's *The New Russia*; Ernest Gruening's *Mexico and Its Heritage*; George H. Danton's *Germany Ten Years After*; John Spencer Bassett's *The League of Nations*.

General works on politics included: *The Pragmatic Revolt in Politics*, by W. Y. Elliott; *The Way of Peace*, by Viscount Cecil; *Imperialism and Civilization*, by Leonard Woolf; *Constructive Citizenship*, by L. P. Jacks; *Back of War*, by Henry Kittredge Norton; *Archon, or the Future of Government*, by Hamilton Fyfe; *Paradoxes of Legal Science*, by Benjamin N. Cardozo; *The Freedom of the Seas*, by J. M. Kenworthy and George Young. Referring especially to America were: Charles Evans Hughes' *Our Relations to the Nations of the Western Hemisphere*, and *The Supreme Court of the United States*; Clarence H. Haring's *South America Looks at the United States*; Leonard D. White's *The City Manager*.

ECONOMICS. The most picturesque contribution to this field came from George Bernard Shaw, who gave to humanity "his last will and testament" in *The Intelligent Woman's Guide to Socialism and Capitalism*. Economic histories included: C. R. Fay's *Great Britain from Adam Smith to the Present Day*; Sir William Ashley's *The Bread of Our Forefathers*; Richard Ehrenberg's *Capital and Finance in the Age of the Renaissance*, translated by H. M. Lucas; Charles Wright and C. Ernest Fayle's *A History of Lloyd's*. Other important economic works were: *The Road to Plenty*, by William T. Foster and Waddill Catchings; *Business the Civilizer*, by Earnest Elmo Calkins; *The New Industrial Revolution*, by Walter Meakin; *Contemporary Economic Thought*, by Paul T. Homan; *Wages in Practice and Theory*, by J. W. F. Rowe; *The Principles of Wages*, by Willem L. Valk; *A Theory of the Labor Movement*, by Selig Perlman; *Representative Industries in the United States*, edited by H. T. Warshaw; *History of Manufactures in the United States*, by Victor S. Clark; *Capital Stock without Par Value*, by John R. Wildman; *Government Ownership and Operation of Railroads*, by Walter M. W. Splawn.

HISTORY. The year was notable for the work done on the origins and results of the World War, such as Sidney B. Fay's *The Origins of the World War*; Pierre Renouvin's *The Immediate Origins of the War*, translated by Theodore Carswell Hume; volume iv of the British

Official History of the Great War, by General Sir James E. Edmunds; volume iv of the *British History of the Great War Based on Official Documents*, by Sir Henry Newbolt; volume iii of *British Documents on the Origins of the War*, edited by G. P. Gooch and Harold Temperley; Karl Frederick Nowak's *Versailles*, translated by Norman Thomas and E. W. Dickes; David Hunter Miller's *The Drafting of the Covenant*; Florence Wilson's *The Origins of the League Covenant*; *A Short History of the World, 1918-1928*, by C. Delisle Burns; *The Fall of the Russian Empire*, by Edmund A. Walsh.

Dealing with more remote history were: Geoffrey Parsons' *The Stream of History*; volume iii of Hilaire Belloc's *History of England* and his *How the Reformation Happened*; James Westfall Thompson's *The Economic and Social History of the Middle Ages* and his *Feudal Germany*; volume ii of Edward Raymond Turner's *The Privy Council of England*; Esme Wingfield-Stratford's *The History of British Civilization*; *Chivalry*, edited by E. Prestage; *Black Democracy*, by H. P. Davis, and *Black Majesty*, by John W. Vandercook, both about Haiti; *American and French Culture 1750-1848*, by Howard Mumford Jones; *Rum, Romance, and Rebellion*, by Charles William Taussig; Victor Chapot's *The Roman World*, translated by E. A. Parker; *Bunker Hill*, by Harold Murdock; *The Taking of Ticonderoga in 1775*, by Allen French; *Macedonian Imperialism and the Hellenization of the East*, by Pierre Jouguet, translated by M. R. Dobie; volume iii of the *Cambridge History of India*, edited by Sir Wolsley Haig; Alfred Bertholet's *The History of Hebrew Civilization*, translated by A. K. Dallas; *In Quest of the Western Ocean*, by Nellis M. Crouse; *The True Adventure of Columbus*, by Marius André; *The Transition from Aristocracy*, by O. F. Christie; *The Struggle for Catholic Emancipation, 1750-1829*, by Denis Gwynn; Albert Mathiez' *The French Revolution*, translated by Catherine Alison Phillips; Carl Wittke's *A History of Canada*; *The Trial of the Templars*, by Edward J. Martin; *The Last Years of a Frontier*, the English and Scottish border 1558-1603 by D. L. W. Tough; and dealing with the future in its own magnificent fashion. Oswald Spengler's *The Decline of the West*, volume ii, translated by Charles F. Atkinson.

SCIENCE. The biologists are always more anxious than other scientists to be understood by the general public, and during 1928, as usual, they produced a number of popular books. Among these were: *Hunger Fighters*, by Paul de Kruif, about discoverers in plant biology, especially grains; *Creation by Evolution*, edited by Frances Mason; *Modern Biology*, by J. T. Cunningham; *Noah's Cargo*, by George Jennison; *Galatea, or the Future of Darwinism*, by W. Russell Brain; *The Biology of Insects*, by George H. Carpenter; *Foibles of Insects and Men*, by William Morton Wheeler; *The Rate of Living*, by Raymond Pearl; *Our Prehistoric Ancestors*, by Herdman Fitzgerald Cleland; *In Search of Our Ancestors*, by Mary E. Boyle; and *Physiology*, by V. H. Mottram. But the astronomers also did very well; for examples: *The Sun, the Stars, and the Universe*, by W. M. Smart; *Eos: or the Wider Aspects of Cosmogony*, by J. H. Jeans; *A Guide to the Constellations*, by Samuel G. Barton and William H. Barton; *Possible Worlds*, by J. B. S.

Haldane; *This Puzzling Planet*, by Edwin Tenney Brewster.

The physicists produced, among others: *The Nature of the Physical World*, by A. S. Eddington; *The Rise of Modern Physics*, by Henry Crew; and *Æolus, or the Future of the Flying Machine*, by Oliver Stewart. Among general works in science were: H. M. Parschley's *Science and Good Behavior*, applying science to ethics; *Galileo, or the Tyranny of Science*, and *The Bases of Modern Science*, by J. W. N. Sullivan; *From Magic to Science*, by Charles Singer, who also wrote *A Short History of Medicine*. In addition, E. E. Free and Travis Hoke published *Weather*.

TRAVEL AND THE OUTDOORS. The year 1928 was noteworthy for the number of recitals of aeronautic experience, such as: *Twenty Hours, Forty Minutes*, by Amelia Earhart; *The Three Musketeers of the Air*, by Capt. Hermann Koehl, Maj. James Fitzmaurice, and Baron Guenther von Huenefeld; *Flying the Arctic*, by Capt. H. G. Wilkins; and *Skyward*, by Commander Richard E. Byrd. Other books for the armchair traveler, not guide books, include: *Persian Pictures*, by Gertrude Bell; *Beneath Tropic Seas*, by William Beebe; *Deserts Idle*, by Michael H. Mason; *Slaves of the Sun*, by Ferdinand Ossendowski; *Tigers, Gold, and Witch Doctors*, by Bassett Digby; *The People of the Twilight* (Eskimos) by Diamond Jeness; *The Land of the Frozen Tide*, (about the Arctic), by Louise Rourke; *A-rafting on the Mississippi*, by Charles Edward Russell; *The Voyage of the Norman D*, by Barbara Newhall Follett; *Santander*, by E. Allison Peers; *Incredible Siberia*, by Junius B. Woods; *Opals and Gold*, by R. M. Macdonald; *Condemned to Devil's Island*, by Blair Niles; *An Indian Journey*, by Waldemar Bonsles; *Europe*, by Count Hermann Keyserling; *Mid-Pacific*, by James Norman Hall; *The Central Americans*, by Arthur Ruhl; *Safari*, by Martin Johnson; *Present-Day Russia*, by Ivy Lee; *The America of Today*, by J. A. Spender; *Worlds Within Worlds*, by Stella Benson; *The Desert Road to Turkestan*, by Owen Lattimore.

Books of outdoor life and sport included: John Tunis' *Sports, Heroics, and Hysteries*; G. S. Sandilands' *Atalanta, or the Future of Sport*; Lacoste on *Tennis*; *The Perfect Ship*, by Weston Martyr; *Trails of the Hunted*, by James L. Clark; Claude E. Benson's *Mountaineering Ventures*; F. R. Burnham's *Scouting on Two Continents*; the anonymous *Memoirs of a Fox-Hunting Man*, supposed to be by Siegfried Sassoon; and *The Evolution of Trout and Trout-Fishing in America*, by Charles Z. Southard.

See also PHILOLOGY, MODERN.

LITHUANIA. One of the new states formed out of the territory of the Russian Empire after the War. Capital, Kovno, although the Lithuanians claim Vilna as the capital of their country.

AREA AND POPULATION. The eastern boundary of the country was defined in a treaty with Russia, July 12, 1920; on the north the boundaries nearly coincide with the former boundary between Courland and Kovno; on the south they are still undetermined. The area, based on 1914 figures, is 31,652 square miles; population, Jan. 1, 1927, 2,254,668. On Feb. 16, 1923, the Council of Ambassadors transferred the Memel district with a population of 170,000 to Lithuania. Just a month later they gave Vilna to Poland. Lithuania, however, continued to claim this district

and to consider Vilna the Lithuanian capital. Important cities are Kovno, 94,405; Grodno, 61,600; Memel, 36,041; Suvalki, 31,600; and Shavli, 21,878.

EDUCATION. In 1927 there were 2320 primary schools with 3281 teachers and 122,000 pupils, and 120 secondary schools with 22,194 pupils. The University of Kovno which was opened in 1922 had in 1927, 258 professors and teachers and over 4000 students.

PRODUCTION, ETC. Lithuania is an agricultural country and preponderantly rural in character. The resources consist chiefly of agricultural produce and timber. The acreage and production of the principal crops in 1927 were: Wheat, 297,000 acres, 5,273,000 bushels; rye, 1,240,000 acres, 21,188,000 bushels; barley, 487,000 acres, 8,630,000 bushels; oats, 766,000 acres, 16,741,000 bushels; potatoes, 343,000 acres, 46,443,000 bushels; linseed and flax combined, 208,000 acres, 1,405,000 bushels of linseed and hempseed, and 74,956 pounds of flax and hemp. In 1926 there were 1,396,000 cattle, 1,441,000 swine, 1,573,000 sheep, and 535,000 horses. The output of cut timber in 1927 was 52,184,500 (cubic feet); the output of matches, 64,900,000 boxes. There were approximately 7300 industrial enterprises, of which only 75 employed 50 or more workmen.

COMMERCE. Lithuania's foreign trade was active during 1927, but the results were not as satisfactory as in the previous year, though market conditions for certain leading items such as flax and lumber improved. Imports during 1927 increased to 265,694,000 lits from 240,760,000 lits in 1926, and exports declined from 253,300,000 lits in 1926 to 245,929,000 lits in 1927. There was an unfavorable balance for the year of 19,765,000 lits as against an export surplus of 12,539,000 lits in 1926. Imports from the United States were valued at 14,503,000 lits in 1927 and exports to the United States at 4,379,000 lits. Similar figures for 1926 were 1,622,000 lits and 2,083,000 lits, respectively.

FINANCE. The actual receipts for the 1927 budget were 269,360,000 lits as against estimated revenues of 242,245,000 lits; the actual expenditures were 230,903,000 lits as against estimated expenditures of 237,964,000 lits. In each case the actual results were more favorable than the estimated. The latest available complete statement of Lithuania's debt was that of Jan. 1, 1926, when it totaled 90,251,000 lits.

COMMUNICATIONS. All railways in Lithuania are owned and operated by the State, and at the close of 1926 comprised 1954 kilometers of line. See preceding YEAR BOOK.

GOVERNMENT. According to the constitution of May 26, 1928, executive power is in the President of the Republic, elected for seven years, who acts through a responsible ministry; and legislative power is in a diet elected for five years by universal, equal, direct, and secret suffrage. President in 1928, Antanas Smetona; Prime Minister, Prof. Augustinas Valdemaras.

HISTORY. Contrary to all expectations, the love feast between Lithuania and Poland at the December, 1927, meeting of the League of Nations did not solve the thorny problem of Vilna. No sooner had the delegates arrived home than the old hatreds flamed forth anew and Lithuania and Poland were at odds again. One thing, however, that the Geneva conferences did accomplish, probably, was the fact that the two quarreling countries were virtually told to settle their dis-

pute without recourse to war. Relations between the two countries remained strained throughout the entire year, and, had it not been for the warning of the western powers, they might have broken altogether. For an account of the rise of the Vilna question, consult preceding YEAR BOOKS.

A meeting of representatives of the two countries held in Germany in April, accomplished nothing in the way of a settlement but at least left a chance for future negotiations. One thing which held up the disputants was the demand on the part of Lithuania for an indemnity of \$10,000,000 for damages because of the occupation of Vilna by Poland. When Poland suggested counter claims, the meetings were called off, and the Lithuanian press and politicians gayly spoke of going to war to retrieve the lost city, which was declared to be the capital of the country in the new constitution proclaimed on May 26. The Lithuanian premier declared publicly that he had been promised the support of Soviet Russia in case of war with Poland. Whether this was true or just to frighten Poland no one can tell because the premier's statement was vigorously denied at Moscow.

The year came to a close with the Vilna problem much further away from settlement than it had ever been before, Lithuania refusing to carry on the normal economic relations with Poland.

LIVER DIET IN ANÆMIA. See FOOD AND NUTRITION.

LIVESTOCK. The year 1928 was unusually favorable for practically all branches of the livestock industry in the United States, particularly for cattle and sheep. The numbers of cattle on farms showed a steady decrease from the high point in 1918 to a low point in 1928, when the estimate was given as 55,696,000, a decrease of approximately 22 per cent in this period. The number of sheep was on the increase, but prices were well maintained. Hogs showed a distinct improvement after reaching a low point in the cycle of prices early in the year, and indications are for a more favorable season next year. Range conditions were not unfavorable, and all sections were free from serious droughts. Feed supplies were better than average. These conditions all indicated a better stabilized industry than had existed at any time since the War.

The decrease in the supply of beef was reflected in the per capita consumption of beef, which, estimated from the total slaughter under Federal supervision, was maintained quite uniformly from month to month at about 0.4 pounds less than the consumption in the corresponding month of 1927. On the other hand, there was a similar increase in the per capita consumption of pork, the price of which was relatively low. The total meat production, as shown in the following table for the numbers of animals slaughtered and the weights of the dressed meats killed under Federal Inspection during 1927 and 1928, together with the three-year average for 1925, 1926, and 1927, indicates that the total available supply of meat was quite comparable in the two years, the decrease of approximately 400,000,000 pounds of beef being offset by a like increase in pork.

The pig survey of the United States Department of Agriculture, as of June 1, 1929, indicated a decrease of about 4,000,000 in the pigs farrowed in the spring as compared with the previous year, and the numbers of sows to be bred for fall far-

MEAT SLAUGHTERED AND STORED UNDER FEDERAL INSPECTION IN THE UNITED STATES IN 1928, WITH COMPARISONS

	<i>Cattle</i>	<i>Calves</i>	<i>Hogs</i>	<i>Sheep and Lambs</i>
Number slaughtered:				
1928	8,467,308	4,679,922	49,795,408	13,488,171
1927	9,520,104	4,875,907	43,633,460	12,883,039
3-year average	9,851,096	5,127,019	42,437,512	12,614,970
Total dressed weight of slaughtered animals:				
1928—lbs.	4,265,056,261	461,951,557	8,579,288,117	522,549,279
1927—lbs.	4,784,563,209	492,562,528	7,730,761,143	501,745,612
3-year average—lbs.	4,983,140,146	521,311,554	7,442,001,766	489,983,293
In storage on December 31:				
1928—lbs.	53,796,000 ^b		833,641,000 ^c	3,148,000
1927—lbs.	59,065,000 ^d		772,783,000 ^e	2,625,000
3-year average—lbs.	67,859,000 ^f		724,353,000 ^g	2,326,000

^a Average for 1925, 1926, and 1927.

^b 36,357,000 lbs. fresh, and 17,439,000 lbs. cured beef.

^c 203,558,000 lbs. fresh, 539,896,000 lbs. cured pork, and 140,687,000 lbs. lard.

^d 37,767,000 lbs. fresh, and 21,298,000 lbs. cured beef.

^e 160,799,000 lbs. fresh, 509,063,000 lbs. cured pork, and 102,926,000 lbs. lard.

^f 44,048,000 lbs. fresh, and 23,811,000 lbs. cured beef.

^g 132,437,000 lbs. fresh, 489,975,000 lbs. cured pork, and 101,941,000 lbs. lard.

rowing also indicated some reduction. There seems no doubt that the increased pork production would have suffered more heavily from lowered prices had the beef situation not been so acute. There were heavy slaughtering of pork in practically all the European countries and there was indication of increased future production of bacon in Russia. Indications in Europe were for a lowered production of pork for 1929 because of the reduced number of hogs at the close of the year, resulting from the heavy slaughtering. Potential hog production was reduced about 10 per cent in Denmark, 5 per cent in England, 2 per cent in Germany, and 20 per cent in The Netherlands, as compared with the preceding year, and European demand, particularly for lard, therefore would probably increase during the coming year. With the existing prices of feed, a more favorable outlook for pork production in the United States was indicated.

The numbers of sheep have been on the increase since the low point in 1922, but the demand for breeding stock and meat animals had also increased though at a slower rate. With the depression in cattle, many cattlemen switched to sheep and it was possible that switching back might result in a lack of demand for animals for restocking purposes. Drought conditions in Australia, however, affected the principal wool-growing areas and considerable difficulty was experienced with lambing. Favorable prospects were predicted for the South American countries, and climatic conditions were favorable in South Africa.

Because of the scarcity and relatively high beef prices, the imports of the United States of beef and veal were heavier than at any time since 1916. Over 52,000,000 pounds were imported in the first ten months of 1928, as compared with 32,000,000 pounds in the corresponding period of 1927. Approximately 38,000,000 pounds of this beef came from Canada, and 8,000,000 pounds from New Zealand, with 2,000,000 pounds coming from Australia.

Reports indicated that the number of beef cattle in Argentina declined and slaughter was less during the first part of 1928 than for the corresponding period of 1927; likewise the numbers of cattle in Australia were also reduced, the exports being about equal to those of the preceding year, which were little more than half the beef exports for 1926. On the other hand, the production of beef cattle is recovering in European countries and the demand for imported beef is not so great.

Conditions in the poultry industry were more favorable than in 1927; the prices for both poultry and eggs averaged higher in 1928. The higher prices were reflected in increased imports of frozen and dried eggs, which, during the first ten months of 1927, amounted to approximately 3,600,000 pounds, and during the corresponding period of 1928, amounted to 12,800,000 pounds. It was reported that a total of 5000 short tons of frozen and dried eggs were shipped from China to the United States, while but 1250 short tons were imported from this source in 1927.

RESEARCH. For a number of years there had been considerable interest, not only in the United States but also in several other countries, particularly Australia and Canada, in the study of factors affecting the grade and quality of meat. During the past year 20 of the Agricultural Experiment Stations were cooperating with several bureaus of the United States Department of Agriculture in studying the effects of breed, age, sex, grade, grass versus grain feeding, various types of feed, and other factors, on the quality and palatability of meat. Approximately 850 experimental cattle, and 700 lambs were fed in these tests, the animals in most cases being graded prior to the experiment with subsequent grading on the hoof, and records of the slaughter data, carcass grades, toughness of particular cuts, and final tests of the palatability of the cooked meat by experienced committees. Over 1200 hogs were employed in the studies of the soft-pork problem.

Australia was particularly interested in the quality of frozen meats, and considerable money was expended by the Research Council in efforts to place a better product upon the English market. Canada and several States along the Canadian border were particularly interested in studies of the relation of type and breed of swine, as well as different methods of feeding, to the production of Wiltshire and Cumberland sides, and the desirability of these products when shipped to the English market, especially with reference to their ability to compete with cured pork from Denmark.

In line with the interest in the quality of meat, the United States Department of Agriculture considerably extended its grading and stamping service for meat products, including practically all the better cuts in commercial plants requesting that such service be granted.

Fundamental research in nutrition showed an increasing tendency toward refinement in technique and measurements. The respiration calo-

rimeter at the Institute of Animal Nutrition of the Pennsylvania State Experiment Station has long been recognized as outstanding equipment. Several of the other State experiment stations installed respiration chambers for the larger animals, without calorimeter control, particularly at New Hampshire, Illinois, and Missouri. An indication of the delicacy of the respiration calorimeter at Pennsylvania is shown by the fact that any change in position of a fasting animal results in a disturbance in the carbon dioxide given off for a period of over one hour after the movement occurs. Further than this, an animal while standing has been found to require definitely more energy than the same animal would require when lying down. Recent work with the respiration chamber at the New Hampshire Station indicated that steers might be carried for three or four months on extremely low rations without affecting their health or ability to reach market condition on subsequent liberal feed, demonstrating an ability to slow down or accelerate vital activities in accordance with the available food supply.

During the year 1928 several new journals for the publication of results of experimental work in animal husbandry appeared, or attention was called to their proposed appearance, as follows: *Journal of Nutrition*, *International Review of Poultry Science*, *Journal of Animal Breeding*, and *Journal of the Central Bureau for Animal Husbandry and Dairying in India*.

CHANGES IN PERSONNEL. The more important changes in personnel during the year included the retirement on July 1, of H. H. Wing, professor of animal husbandry, at Cornell University for 40 years. Professor Wing was succeeded by F. B. Morrison, director of the New York State Agricultural Experiment Stations. Prof. F. G. King was appointed head of the animal husbandry department at Purdue University, to succeed Prof. J. H. Skinner, who was made director of the Indiana Agricultural Experiment Station. Paul Gerlaugh, extension specialist in animal husbandry, at Ohio State University, was appointed head of the animal husbandry department, of the Ohio Agricultural Experiment Station at Wooster. Will C. Barnes, of the U. S. Department of Agriculture, and a popular writer on range and livestock problems, retired from the Department service July 1. M. G. Snell, of Iowa State University, was appointed assistant professor of animal husbandry at Louisiana University, to succeed Prof. E. L. Jordan, who resigned. Dr. L. C. Dunn, geneticist in poultry husbandry, at the Connecticut Storrs Agricultural Experiment Station, accepted a position as professor of zoology at Columbia University, on September 1. He was succeeded by Dr. Walter Landauer, of the same station. Prof. T. B. Charles, of the poultry husbandry department at the Pennsylvania State College and Experiment Station, was appointed professor of poultry husbandry at the New Hampshire State College. He was succeeded by Prof. E. M. Funk, from the University of Missouri.

Gordan H. True, professor of animal husbandry at the University of California since 1913, died on June 5. He was widely known for his work in animal husbandry and was selected by the American Society of Animal Production for distinguished honor, at its annual dinner in 1927. Prof. C. R. Nobles, of the Virginia Agricultural Experiment Station, died August 13.

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recent livestock publications are A. W. Sampson, *Livestock Husbandry on Range and Pasture* (New York, 1928); I. C. Kronacher, *Allgemeine Tierzucht* (Berlin, 1928, 3d. ed., rev.); R. A. Clemen, *By-products in the Packing Industry* (Chicago, 1927); J. E. Platt, *The Thoroughbred Race Horse: Its Breeding and Early Management* (London, 1927); C. E. Cowley, *Classing the Clip; A handbook on wool classing* (Sydney, 1928); W. Zorn, *Schweinezucht* (Stuttgart, 1927); L. M. Hurd, *Practical Poultry Farming* (New York, 1928); J. H. Crum, *The Crumazone Method of Intensive Poultry Culture for the Commercial Farm* (New York, 1928); H. F. Carter, *A Manual of Management for Duck Keepers* (Fair Oak, Hants, Eng. 1928); F. G. Ashbrook, *Fur Farming for Profit* (New York, 1928).

LIVING, COST OF. See STATISTICS.

LI YUAN-HUNG, 18 yüo-än-hung. Chinese statesman, died at Tientsin, China, June 3. He was born in the Province of Hupeh in 1864. He was trained originally as a naval officer, and took part in the war with Japan, 1894-95. Later he was transferred to the army and, having studied military science in Japan, took part in the modernization of the Chinese forces. When the great revolution took place in the autumn of 1911, Li Yuan-hung was opposed at first to the change, but soon became convinced of its desirability, and joined the Sun Yat-sen movement. He was successful as a military leader against the Manchus, and also displayed skill as a diplomat. When the Manchus were deposed, Feb. 7, 1912, he had been elected to the vice presidency of the new Chinese Republic and he remained in that office until the death of Yuan Shih-kai, who had been elected President in 1913, elevated him to the Presidency. Under Li Yuan-hung the Parliament was restored, having been suppressed by Yuan Shih-kai, and resumed its work of framing a constitution for China. In March, 1917, China broke off relations with Germany. A dispute between Li Yuan-hung and his Prime Minister, Tuan Chih-jui, over the questions of the constitution and the method of declaring war on Germany brought about the Manchu *coup* of General Chang-hsun, which restored the old régime for twelve days, Li Yuan-hung losing the Presidency. Thereafter, until June, 1922, he remained in retirement; in that month, when the war of the generals was devastating China, President Hsu Shih-chang retired and was succeeded by Li Yuan-hung, with the support of the members of the old Republican party, backed by General Wu. He was opposed by Sun Yat-sen, head of the Cantonese Government, and only retained the Presidency until June 13, 1923, when, under pressure by the militarists, he was compelled to flee from Peking to Tientsin. Thereafter he lived in retirement in the British concession at Tientsin.

LOAN EXHIBITIONS. See ART EXHIBITIONS.

LOANS. See BANKS AND BANKING.

LOAN SHARKS. See RUSSELL SAGE FOUNDATION.

LOEWENSTEIN, ALFRED. Belgian financier, died while crossing the English Channel in an airplane, July 4, by a fall from the plane. His body was found floating in the Channel several days later. There was considerable controversy over the cause of the fall as it was attributed to both accident and design, and suicide was mentioned. Captain Loewenstein was a specta-

lar figure in the world of finance, and was sometimes called a rival of Sir Basil Zaharoff for the title of "The Mystery Man of Europe." He was born in 1879 and began his financial operations in a small way at Brussels, on the stock exchange of that city. He was active before the World War, in the promotion of companies and the sale of securities, but did not acquire an international reputation until after the close of the fighting. He obtained his military title by service in the Belgian Army, and his contributions to the Allied cause won for him a Companionship of the Order of the Bath in Great Britain. Captain Loewenstein's interests were numerous, varied, and large, but his principal activities were in the fields of hydro-electric development and artificial silk, in which he was a prominent and world-wide figure. A short time before his death he was credited with a grandiose scheme to gain control of the Bank of Brussels, but his plans were frustrated. His fortune was very great. He offered to lend \$10,000,000 to Belgium to assist in the financial stabilization of that country and also made a similar offer to the French Government. These offers brought forth many inquiries as to the nature of the man who had made them. His ostentatious manner of life, including the maintenance of airplanes at various points in Europe to enable him to travel most quickly from one country to another, was frequently the subject of newspaper comment. This was especially marked when he visited the United States in the Spring of 1928.

LOGIC. See **PHILOSOPHY.**

LORENTZ, Ló'rěnts, HENDRIK ANTOON. Dutch physicist and co-winner of the Nobel Prize for physics in 1902, died at Haarlem, February 4. He was born at Arnheim, July 18, 1853, and, having been graduated from the University of Leyden in 1876, he returned two years later as professor of theoretical physics, extending the researches of James Clerk-Maxwell's on the relation between light and electricity. Lorentz advanced the electron theory that magnetism and light are the result of the interaction of electric charges which form the ultimate connection between ether and ponderable matter. His work in electro-dynamics, which was done approximately between 1895-1902, was the starting point of the modern theory of relativity, and Albert Einstein was, at one time, his pupil. Lorentz also contributed to the study of thermo-dynamics, radiation, and theory of gases. Lorentz tried to encourage coöperation between scientists in different countries and he frequently was the leader at various conferences of physicists in Europe, being especially fitted for such a position by his rapid grasp and clear exposition of points under discussion. He spoke several languages and often lectured at foreign universities, including Columbia, in New York City, in 1906, at the Collège de France in 1912 and 1913, and at several universities in England where he acted as one of the exchange professors of the Anglo-Batavian Society in 1923. He attended the International Research Council in 1919 and was the second chairman of the Committee of Intellectual Co-operation of the League of Nations. He shared the Nobel Prize in physics with his pupil, Zeeman, in 1902, and, in 1905, he was made foreign member of the Royal Society of Great Britain, receiving the Rumford Medal three years later. He was given also the Society's Copley Medal in 1918, and the honorary degree of D.Sc. from the

University of Cambridge in 1923. He was made a foreign associate of the National Academy of Sciences of the United States in 1906. Besides numerous important articles on the development of physics and contributions to journals of learned societies, Lorentz wrote: *La Théorie électromagnétique de Maxwell* (1892); *Versuch einer Theorie der electrischen und optischen Erscheinungen in bewegten Körpern* (1895); *A Textbook of Differential and Integral Calculus* (1882); *A Textbook of Physics* (1888-90); *Zichtbare en onzichtbare bewegingen* (1901); *Abhandlungen über theoretische Physik* (1907); and *The Theory of Electrons* (1909).

LOS ANGELES FLOOD CONTROL. See **DAMS.**

LOUISIANA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 1,798,509. The estimated population on July 1, 1928, was 1,950,000. The capital is Baton Rouge.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops, in 1927 and 1928.

Crop	Year	Acreage	Prod. bu.	Value
Cotton	1928	1,985,000	685,000 ^a	\$61,308,000
	1927	1,542,000	548,000 ^a	52,608,000
Rice	1928	484,000	18,392,000	16,553,000
	1927	500,000	20,000,000	17,400,000
Corn	1928	1,242,000	21,114,000	19,847,000
	1927	1,161,000	20,318,000	18,286,000
Potatoes	1928	41,000	2,870,000	2,870,000
	1927	41,000	2,665,000	4,397,000
Sweet potatoes	1928	74,000	6,660,000	5,661,000
	1927	99,000	9,702,000	6,791,000
Hay	1928	315,000	449,000 ^b	6,354,000
	1927	296,000	374,000 ^b	5,097,000
Sugar cane	1928	73,000	2,244,000 ^b	.....
	1927	73,000	962,000 ^b	.....

^a bales, ^b tons.

MINERAL PRODUCTION. Petroleum, which made up more than half the State's total mineral production of 1926, yielded 21,061,000 barrels in 1927, as against 23,201,000 in 1926; the product was valued, for 1927, at \$38,700,000 (estimated) and, for 1926, at \$38,200,000. Natural gas produced was, in quantity, 157,423,000 M cubic feet in 1926, the year of latest record, and in 1925, 152,620,000 M; in value, \$8,768,000 for 1926 and for 1925, \$8,125,000. Gasoline was derived from natural gas to the quantity of 43,557,000 gallons in 1926, and the product in 1927 was higher, being 46,200,000 gallons; by value, it was, for 1926, \$3,692,000; for 1927, \$2,472,000. Sulphur is produced in the State from one important mine, but this mine was shut down in 1924, thereafter shipping from stock on hand. The salt output of the State was 520,400 short tons in 1926 and 500,350 in 1925; in value, \$2,457,875 for 1926, and for 1925, \$2,218,265. Sand and gravel produced in 1926 had a value of \$1,784,315. The total value of the State's mineral production in 1926 was \$62,203,543; in 1925 it was \$60,503,891.

FINANCE. State expenditures in the year ended Dec. 31, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$19,663,230 (of which \$5,420,558 was aid for local education); for conducting public service enterprises, \$58,382; for interest on debt, \$723,400; for permanent improvements, \$8,981,123; total, \$29,426,135 (of which \$10,812,821 was for highways, \$3,469,605 being for maintenance and

\$7,343,216 for construction). Revenue was \$28,126,095. Of this, property and special taxes formed 35.9 per cent; departmental earnings and charges for services of State officers, 4.4 per cent; license sales, including severance tax, tobacco tax, and gasoline tax, 41.5 per cent. Assessed valuation of property was \$1,724,954,042; State taxation thereon, \$9,918,486. Net funded State debt on Dec. 31, 1927, was \$16,459,287. Of outstanding debt \$2,498,000 was for highways.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 4789.91. There were built in 1928, 32 miles of additional second track.

EDUCATION. A movement to render the office of parish superintendent elective by popular vote was defeated in the State Legislature. For the academic year 1927-28 the school-age population of the State was placed at 394,456 white, 255,740 colored. There were registered in the public schools 269,648 white and 145,833 colored pupils. Of these, 226,533 whites and 141,263 colored were in the elementary schools; in the high schools were 43,115 whites and 4570 colored. Expenditures for education was \$16,175,601.46, exclusive of outlay. Salaries of teachers averaged: white, \$971.20; colored, \$303.88.

CHARITIES AND CORRECTIONS. A State Board of Charities and Corrections in 1928 exercised supervision over State institutions, without wielding administrative powers. It was composed of six members, with the Governor as chairman ex-officio. The chief charitable and penal institutions were: Charity Hospital, New Orleans; Charity Hospital, Shreveport; Central Louisiana Hospital (insane), Pineville; East Louisiana Hospital, Jackson; State Colony and Training School for Feeble-Minded, Alexandria; State School for Deaf, Baton Rouge; State School for Blind, Baton Rouge; State School for Blind Negroes, Baton Rouge; Soldiers' Home of Louisiana, New Orleans; State Penitentiary, Baton Rouge; Louisiana (correctional) Training Institute, Monroe. The State Penitentiary had 1743 prisoners on Jan. 1, 1928; the mental patients in State hospitals numbered 3673; the inmates of the State Colony and Training School, the institution for the feeble-minded and epileptics, numbered 256.

LEGISLATION. The State legislature met in regular session May 14, and adjourned July 12. It passed resolutions embodying 19 amendments to the State Constitution, subject to popular approval at the November election. Chief among these were the provision of a \$30,000,000 bond issue for the cost of paving main highways, with an increase in the gasoline tax to meet resulting charges; the authorization of the Highway Commission to construct toll bridges to be paid for out of collections; authorization to levee boards to lay a quarter-mill tax to pay for property, land, and highways to be destroyed for the purpose of levee sites, thus furnishing coöperation in the Federal scheme of flood relief; empowering the Legislature to organize navigation and river improvement districts, with resources to be obtained from a one-mill tax for ten years; authorizing the levee board of the Parish of New Orleans to issue \$15,000,000 of bonds for completing Lake Pontchartrain improvements; permitting judges on reaching the retirement age to serve until the next subsequent congressional election, in order to end the need of special elections to fill their places.

An act was passed to end the term of the president of the State board of health, Dr. Oscar Dowling, and to enable the governor to name his successor for a term of four years; and the disposal of about \$500,000 a year of funds was removed from the hands of this board. The State tobacco tax was repealed. A bill providing for work to eradicate the cattle tick was enacted. There was passed an act to license makers of small personal loans in amounts of less than \$150 and to restrict interest on such loans to a maximum of 3½ per cent a month. Provision was made for State purchase of textbooks for pupils in public and private schools. A code of criminal procedure, the first recodification of the State criminal law since 1805, eliminating many antiquated provisions and designed to provide speedier administration of justice, was adopted. The Legislature passed a measure designed to put the severance taxes of the State on a quantity basis. A malt tax of 10 cents a can was enacted, and an act for arbitrating business disputes was passed.

POLITICAL AND OTHER EVENTS. At the State primary elections of January 17, Huey P. Long was elected Democratic candidate and was duly elected Governor. He was inaugurated May 21, and sponsored policies which were reflected in chief part in the laws passed by the Legislature. The State supreme court, in a decision of March 12, upheld the administration of Conservation Commissioner Irion, and reversed a lower court decision of 1927 removing him from office. Penalties imposed specifically on second offenders against the criminal law, by a decision of the State supreme court rendered January 18, could be enforced only where the offender had repeated his violation of the statute that had been broken in the first instance. Work on the superstructures of the Chef Menteur and Rigolets bridges, being built under the authority of the State highway commission, started in the latter part of the year. The Fuqua Memorial Hospital, a part of the Central Louisiana Hospital for the Insane at Pineville, was opened May 9. The Intracoastal Canal Association worked to obtain rights of way for a projected waterway in the area between the courses of the Calcasieu and Mermontau rivers, some \$7,000,000 having been appropriated by Congress in 1927 for intracoastal canal work in Louisiana. The State department of conservation, jointly with a fur company, engaged in the capture of muskrats and their release in the hundreds of thousands of acres of muskrat lands in St. Bernard and Plaquemines parishes that had been flooded out by the opening of the Caernarvon crevasse in 1927.

New Orleans became the terminus of an air mail line from New York via the Atlantic and Gulf States on May 1. Efforts of outside interests to obtain a franchise to introduce natural gas into the city led to a contest between these and the existing interests providing artificial gas.

ELECTION. Of the Southern Democratic States, Louisiana was one of those in which the peculiarities of the Hoover-Smith presidential campaign had least effect. The State not only remained in the Democratic column, its abiding place in every presidential year subsequent to 1876, but gave the Democratic National ticket a majority not far removed from that of the Democratic ticket of 1924. The 1928 vote for President was: Smith (Dem.), 164,655; Hoover (Rep.), 51,160. The entire delegation of the State in the House

of Representatives, all Democratic, was reelected. The proposal for an amendment of the gasoline tax law, relating to an issue of \$30,000,000 of highway bonds of the State, was reported to have been carried.

OFFICERS. Governor, Huey P. Long; Lieutenant-Governor Paul N. Cyr; Secretary of State, J. J. Bailey; Treasurer, H. B. Conner; Auditor, L. B. Bayard, Jr.; Attorney-General, Percy Saint; Superintendent of Education, T. H. Harris.

JUDICIARY. Supreme Court: Charles A. O'Neill, Chief Justice; Associate Justices; Ben C. Dawkins, Winston Overton, John St. Paul, Wynne G. Rogers, John R. Land, H. F. Brunot.

LOUVAIN LIBRARY. See BELGIUM, under *History*.

LUGANO CONFERENCE. See LEAGUE OF NATIONS.

LUMBERING. See FORESTRY.

LUMMIS, CHARLES FLETCHER. American author, and archaeologist, died at Los Angeles, Calif., November 25. Born at Lynn, Mass., Mar. 1, 1859, he attended Harvard with the class of 1881. He edited a newspaper in Cincinnati, O., 1882-84, and then moved to Los Angeles, walking the 3507 miles for pleasure. After working as city editor of the *Los Angeles Times*, 1885-87, his health failed, and he lost his eyesight. In order to recuperate, he lived in New Mexico for five years, studying the Indian languages, and customs, and the archaeology of the country. He traveled extensively in the United States, and in Central and South America, mostly on foot and on horseback. Returning to Los Angeles, he founded the *Out West Magazine*, in 1894, in place of *The Land of Sunshine* on which he had formerly worked. He edited that periodical until 1909, also being librarian of the Los Angeles public library, from June 1, 1905, until Apr. 1, 1910. Mr. Lummis was active in promoting the welfare of the Indians. Besides aiding in the foundation of the Southwest Society of the Archaeological Institute of America, 1903, and serving as its secretary, he assisted in the incorporation of the Institute, 1906. He was also instrumental in founding the Southwest Museum, in 1907, with its "Lummis Carocal Tower," to which he presented a valuable library, and Spanish-American collection. He was a corresponding member of the Royal Academy of Spain, and of the Spanish Royal Academy of History, and he was knighted in 1915 by the King of Spain for his historical researches. He belonged to the American National Institute of Arts and Letters, as well as to numerous other scientific and literary societies. Among his most important books are the following: *A New Mexico David* (1891); *A Tramp Across the Continent* (1892); *The Spanish Pioneers* (1894); *The Man Who Married the Moon, and Other Pueblo Indian Folk Stories* (1894); *The Gold Fish of Grand Chimú* (1896); *The Enchanted Burro* (1897); *The Awakening of a Nation* (1898); *My Friend Will* (1911); *Spanish Songs of Old California* (1923, 2d book, 1928); and *Mesa, Cañon and Pueblo* (1925).

LUTHER, FLAVEL SWEETEN. American educator, died at Pasadena, Calif., January 4. He was born at Brooklyn, Conn., Mar. 26, 1850, and was graduated from Trinity College, Hartford, Conn., in 1870. For two years he taught at West Troy, N. Y., in the meantime being ordained a deacon in the Protestant Episcopal Church. From 1876 to 1881 he was professor of mathematics at Ra-

cine College. He then taught at Gambier, Ohio, 1881-82, and held the chair of mathematics at Kenyon College, 1882-83, before going to Trinity College as Seabury professor of mathematics and astronomy. From 1904 until 1919, when he retired, he was president of the College. He was also interested in politics and served four years, from 1907 to 1911, as a member of the State Senate of Connecticut. Trinity College conferred on him the honorary degree of Ph.D. in 1896 and that of LL.D. in 1904. He was also a Doctor of Laws of Tufts College (1905) and of Wesleyan University (1906). Dr. Luther's presidency of Trinity was marked by the expression of ideas that were considered novel or revolutionary by many. He was specially conspicuous for his advocacy of the establishment of industrial or trade schools and for his opposition to schools under ecclesiastical control.

LUTHERAN CHURCH. A denomination made up of groups of religious bodies holding in doctrine to the unaltered Augsburg Confession and to Luther's Small Catechism. Its membership is chiefly in Germany, northern Europe, the United States, and Canada. During 1928 final arrangements were made for the Lutheran World Convention, to meet at Copenhagen, Denmark, during the last two weeks of June, 1929, for the purpose of modifying the preparation necessary for membership to Lutheran churches throughout the world. Delegates of the church visited various reformation countries, making particular effort to reestablish Lutheran doctrines in Russia, where the church continued to support Leningrad Seminary.

In the United States during 1928, the church also worked toward unification. The Iowa, the Joint Ohio, and the Buffalo synods planned a merger, and six synods accepted the Jubilee Catechism. Extensive building programmes were drafted.

Educational work was conspicuous within the individual groups. The Augustana Synod raised \$1,500,000 to support the college in Rock Island, and a new women's hall was occupied in the fall term. The Musical Temple was completed at Bethany College, which had become a musical centre at Lindsborg, Kansas. Delegates at the Minnesota conference raised approximately \$650,000 for charities. Besides the 1418 students who were preparing for the ministry at the various Lutheran colleges of the Missouri Synod, 698 students were enrolled during the year in theological seminaries, and 684 persons were preparing to teach in the Christian day schools. A substantial endowment fund was provided for Valparaiso University, Indiana.

The Iowa Synod established an institution at Williston, Ohio, to provide for the feeble-minded, cripples, and epileptics of all denominations, which will care for the helpless in the central States, corresponding to a similar Lutheran institution in the Far West. The synod admitted the Lutheran Deaconess Motherhouse, of Milwaukee, Wis., into affiliation. The Joint Ohio Synod arranged for the centralization of its mission work in India, and authorized a \$50,000 building fund for a mission high school. Representatives of the synod convened in 1928, and resolved to establish fellowship with the Norwegian Lutheran Church. That organization dedicated a church under Dr. J. A. O. Stub in Minneapolis, April 1, which seated about 3000 persons, and cost \$500,000. A second church, costing \$350,000, was dedicated

under Dr. Martin Anderson at Chicago, November 11. The Slovak Synod published a new edition of the hymn book, *Tranoscius*, containing more than 1000 hymns. The synod opened a new mission field in Canada.

The general growth of the church during the year is indicated by the following statistics of the *Year Book of the United Lutheran Church in America*, for the United States and Canada: Pastors, 11,234; congregations, 16,686; baptized members, 4,210,509; confirmed members, 2,728,629; communing members, 2,269,422; Sunday schools, 11,671; officers and teachers, 125,497; scholars, 1,447,538; value of church property, \$324,690,605; congregational expenses, \$45,467,848; congregational benevolences, \$11,969,677; and congregational expenditures, \$57,262,521.

In America, outside of the United States and Canada, there were 3889 congregations with 481 pastors, 311,468 baptized members, 202,953 confirmed, and 189,376 communing members. In the 2003 Sunday schools there were 155,735 pupils, and 5297 officers and teachers. The church property was valued at \$5,965,787, and the congregational expenses were \$306,333, the benevolences \$108,120, and the expenditures \$414,453. It was estimated that there were, in 1928, 70,000 Lutheran churches in the world, with 49,000 pastors, and a baptized membership of 81,023,180.

LUXEMBURG, lüks'em-bürg. A small state of western Europe, bounded by Germany, France, and Belgium; neutralized by the Treaty of London, 1867; occupied by the Germans during the War; restored to independence after the armistice. Area, 999 square miles; population, according to the census of 1922, 260,767, as compared with 263,824, Dec. 1, 1916. The great majority of the population is Roman Catholic. Luxembourg is a country of small landowners and of farmers tilling their own holdings. The total area of land devoted to agriculture was about 394,000 acres in 1926. The principal foodstuffs raised in the grand duchy are potatoes and cereal grains, including rye, wheat, barley, and oats. The cultivation of oats covers the largest area of land and is followed in importance by potatoes. The leading industry of the State, however, is mining and the production of iron and steel. The mineral resources of Luxembourg include comparatively extensive iron-ore mines, as well as slate, lime, dolomite, quartzite, and stone beds. The production of pig iron which in 1913 was some 2,510,000 gross tons, in 1926 had reached 2,520,000 tons and for 1927 was estimated at 2,660,000 tons. In 1927 the production of steel ingots and castings which had amounted to 2,210,000 tons in 1926 was estimated at 1,420,000 tons. Brick, printing, leather, and glove industries are also relatively important. Separate figures on foreign trade have not been available since the economic union in 1922 with Belgium. The budget estimates for 1928 were: Revenue, 270,249,192 francs; expenditure, 261,335,689 francs. The public debt on Dec. 31, 1926, amounted to 459,000,609 francs. In 1925 there were 342 miles of railways. Under the constitution, as amended in 1919, sovereign power rests in the nation and the representatives are elected on the basis of universal suffrage and proportional representation. The Grand Duchess in 1928 was Charlotte Aldegonde, born Jan. 23, 1896, who succeeded to the throne, Jan. 9, 1919. The Minister of State and President of the Government was M. Bech (appointed July, 1926). The other members of

the cabinet were: Director-General of Justice and Home Affairs, N. Dumont; Public Works, Trade, and Industry, M. Clemang; Finance and Social Welfare, M. Dupong.

LYNCHINGS. At the end of the year it was announced by Tuskegee Institute that lynchings were fewer in 1928 than during any of the four preceding years. In 1928 eight Negroes and one Mexican were lynched as compared with 16 lynchings in 1927, 30 in 1926, 17 in 1925, and 16 in 1924. The nine lynchings of the year occurred in the following States: three were in Mississippi, two were in Louisiana, two were in Texas, one was in Missouri, and one was in New Mexico. On Dec. 31, 1928, word came from Parchman, Miss., that the Negro slayer of a prison keeper had been captured and burned to death by a mob, his body having been tied to logs and soaked with gasoline.

MACAO, makä'ô. An island at the mouth of the Canton River, in China, which with the two adjacent islands of Taipa and Colôane, constitute a province of Portugal. Area, 4 square miles, population, according to the census of 1920, 83,984, of whom 3816 were Portuguese and the remainder for the most part Chinese. The trade is chiefly in transit and is mainly in the hands of the Chinese. In 1926-27 the revenue was estimated at 3,029,210 escudos and the expenditure at 3,321,742 escudos. The city of Macao is divided into two parts, inhabited respectively by Chinese and non-Chinese, each under its own administration.

MCCORMICK, SAMUEL BLACK. American educator, died at Pittsburgh, Pa., April 18. He was born in Westmoreland County, Pennsylvania, May 6, 1858. He was graduated from Washington and Jefferson College in 1880. After teaching for a short time at the Canonsburg, Pa., Academy, he returned to Washington and Jefferson as a professor (1881-82). He was admitted to the bar of Pennsylvania in 1882 and practiced law at Pittsburgh, 1882-83, and at Denver, Colo., 1883-87. He had turned his attention to theology, and in 1890, after three years' study at the Western Theological Seminary, Pittsburgh, he was ordained in the Presbyterian ministry. He was pastor of the Central Church, Allegheny, Pa., 1890-94, and of the First Church of Omaha, Nebr., 1894-97. In the latter year he became president of Coe College, Iowa, and in 1904 he was chosen as chancellor of the Western University of Pennsylvania, now the University of Pittsburgh. In 1924 he became chancellor emeritus. Under his care, the university underwent a transformation and expansion, as well as a change of name. When he took charge it was an institution little known except locally and had 800 students. When he retired the student body had grown to 10,000, and the university had assumed a place among the foremost educational institutions of the United States.

MCCUTCHEON, ma'küch'ün, GEORGE BARR. American novelist, died suddenly at New York, October 23. He was born in Tippecanoe County, Ind., July 26, 1866, and attended Purdue University, where he was one of a group of talented young men, including his brother, John Tinney McCutcheon, the cartoonist, Booth Tarkington, and George Ade. After leaving college, McCutcheon started work as a reporter on the *Lafayette Journal* in 1889, and he was made city editor of the *Lafayette Courier* in 1893. While with

that newspaper, he wrote *Graustark* (1901), a romantic tale of a Balkan Kingdom of that name. The book was immediately so successful that hundreds of readers inquired for the actual road to McCutcheon's imaginary country. Giving up journalism he moved to Chicago, and after establishing his reputation with two successful but less important novels, he wrote *Brewster's Millions* (1903), which he published under the pen name, "Richard Greaves," in order to prove, as he did, that the book would be popular without the prestige of his name. From that time until his death, McCutcheon published at least one book a year, and, writing romantic stories in the day of realistic novels, he became a popular leader in a school of adventuresome and entertaining fiction in the United States. McCutcheon, resided in New York from 1911 and collected paintings and rare books. As president of the Authors' League of America, 1924-25, he tried unsuccessfully to secure Federal legislation which would extend the copyright term on writing and musical composition by fifty years. McCutcheon considered *Beverly of Graustark* (1904), the best of his many books. All were well received and several were popular enough to be dramatized; they include: *The Husbands of Edith* (1908); *The Rose in the Ring* (1910); *What's His Name?* (1911); *Mary Midthorne* (1911); *Her Weight in Gold* (1912); *The Hollow of her Hand* (1912); *A Fool and his Money* (1913); *The Prince of Graustark* (1914); *Mr. Bingle* (1915); *From the House Tops* (1916); *The Light that Lies* (1917); *The City of Masks* (1918); *Sherry* (1919); *Anderson Crow, Detective* (1920); *Quill's Window* (1921); *Yolopp* (1922); *Oliver October* (1923); *East of the Setting Sun* (1924); *Romeo in Moon Village* (1925); *Kindling and Ashes* (1926); *The Inn of the Hawk and Raven* (1927); and McCutcheon was writing another novel when he died.

MACDONALD, CHARLES. American civil engineer and bridge contractor, died at Gananoque, Ont., July 8. He was born at Gananoque, Jan. 26, 1837. He studied at Queen's University, Kingston, Ont., and then, desiring to become an engineer, worked for a time at surveying on the Grand Trunk Railway. In 1857 he was graduated from Rensselaer Polytechnic Institute, Troy, N. Y. He then returned to the Grand Trunk, on extension work, and from 1863 to 1868 was placed in charge of surveys and construction for the Philadelphia & Reading R. R. He was captured by the Confederates at Gettysburg, but was soon released. While engaged on the Reading, he began his real life work, as a bridge builder, by taking part in the construction of a bridge over the Schuylkill River. This done, he entered into partnership with A. B. Burton, an experienced bridge constructor. In 1866 Macdonald and Burton obtained the contract for building all the bridges between Hoboken, N. J., and Dover, N. J., on what is now part of the Delaware & Lackawanna R. R. They constructed several large bridges. The Delaware Bridge Company was organized, with Macdonald as president, and erected, among other bridges, the one over the Susquehanna River, at Harrisburg, Pa., for the Pennsylvania R. R. In 1884 the company was merged with others in the Union Bridge Company, which built many notable long-span bridges, including the Poughkeepsie, N. Y., bridge over the Hudson River, the Merchants' Bridge at St. Louis, Mo., and the Hawkesbury Bridge in Australia.

The contract for the last-named structure was won in a world-wide competition. Difficulties with the foundation led Macdonald to go to Australia on a half-day's notice, and he brought the work to a successful conclusion. In 1900, all the other partners having withdrawn, Macdonald merged the Union Bridge Company with the American Bridge Company, which in turn became one of the constituent parts of the United States steel Corporation. Soon after this absorption he retired. Mr. Macdonald was president of the American Society of Civil Engineers, 1908-09, and a member of the Canadian Society of Civil Engineers and the Institute of Mining Engineers. Queen's University made him an LL.D. in 1894, and Rensselaer Polytechnic Institute and Stevens Institute honored him by election as trustee.

MCGILL UNIVERSITY. A coeducational institution of higher education at Montreal, Quebec, Canada; founded in 1821. The enrollment for the autumn session of 1928 was 2875; distributed as follows: Arts, 1064; applied science, 297; medicine, 476; commerce, 225; graduate school, 154; music, 144; dentistry, 40; law, 82; physical education, 42; pharmacy, 22; social workers, 29; graduate nurses, 50; library school, 18; and Macdonald College (agriculture and household science), 232. The registration in the French Summer School of 1928 was 193. The number of members on the teaching staff was 473. Among the appointments to the faculty during the year were the following: James Bertram Collip, to be professor of bio-chemistry and chairman of the department; John Beattie, to be assistant professor of anatomy; Percy Ellwood Corbett, to be dean of the faculty of law; Frank R. Scott, assistant professor of constitutional and federal law; A. Grant Fleming, professor of public health and preventive medicine and director of the department; Wilder G. Penfield, clinical professor of neurological surgery; Boris P. Babkin, research professor of physiology; and N. J. Berrill, assistant professor of zoology. The productive funds of the University amounted to \$18,153,446 and the income for the year to \$2,046,688. The library contained 273,633 volumes. Principal, Sir Arthur William Currie, G.C.M.G., K.C.B., LL.D.

MCGIVNEY, PATRICK J. American Roman Catholic clergyman and Supreme Chaplain of the Knights of Columbus, died at Paris, France, May 8. He was born at Waterbury, Conn. He was one of three brothers to enter the Roman Catholic priesthood; one was the late Rev. Michael J. McGivney, a founder of the Knights of Columbus. After graduating from Niagara University in 1887, he studied philosophy at the same institution, and then studied theology at the Grand Seminary, Montreal, Que., and at St. John's, Brighton, Mass. He was ordained a priest in 1892, and served as pastor of churches at Middletown, New Canaan, and Bridgeport, Conn. From 1913 he was pastor of St. Charles's Church, Bridgeport. Niagara University conferred on him the degree of LL.D., and he was raised to the rank of domestic prelate by Pope Pius XI, in recognition of his work as Supreme Chaplain of the Knights of Columbus. He held the office for many years and was active in war work during the World War.

MCGRAW, JAMES J. American banker and politician, died at Hot Springs, Ark., March 3. He was born at Leavenworth, Kans., Aug. 21, 1874. He settled at Tulsa, Okla., in 1920, and

from 1921 until his death was president of the Exchange National Bank of Tulsa. He was also president of the McGraw-Baughman-Bearly Lumber Company. Mr. McGraw served as Republican National committeeman from Oklahoma, 1916-20. The position of first assistant postmaster general was offered to him by President Harding, but he declined it. During the World War he was in charge of all the disbursements of the Knights of Columbus in France, and he was decorated with the ribbon of the French Legion of Honor and the Belgian Order of St. George.

MACLEOD, MALCOLM HUGH. American engineer and railway builder, died at Toronto, Ont., February 8. He was born on the Isle of Skye, Scotland, July 13, 1857, and was educated at the public schools of Franklin, Pa., and of New York. In 1878 he joined the engineering staff of the Canadian Pacific as an axeman. He advanced until he became chief engineer of the Crow's Nest division, in 1898. In 1900 he was made chief engineer of the Canadian Northern, and was appointed general manager and chief engineer in 1907. Prior to the amalgamation of the Canadian Northern and Grand Trunk Railways, in 1923, Mr. MacLeod was appointed vice president of the Canadian Northern in charge of construction, and after the amalgamation he became advisory engineer to the executive. During his service with the Canadian Northern, more than 4000 miles of line were constructed, and he was credited with laying out more railway mileage than any other man in the world. He prepared the original plans for the Toronto Railway viaduct.

McNARY-HAUGEN BILL. See AGRICULTURAL LEGISLATION; also UNITED STATES, under Congress.

McNARY-WOODRUFF LAW. See FORESTRY.

McSWEENEY-McNARY LAW. See FORESTRY.

MADAGASCAR. An Island belonging to France lying off the southeast coast of Africa, from which it is separated by the Mozambique Channel, about 240 miles wide at its narrowest point. The island, whose area is estimated at 241,094 square miles, has over 3000 miles of coast, and is 980 miles long with a greatest breadth of 360 miles. The population, according to the census of 1926 (including the Mayotte and Comoro Islands), was 3,621,342, of whom 3,591,943 were Malagasy, 18,040 were French, and 11,359 foreigners. The most numerous tribes of the Malagasy are the Hova or Merina, which are the most industrious and enterprising, and whose language is the prevailing dialect. Capital, Antananarivo, in the centre of the island with a population in 1926 of 70,847. Other large towns are: Tamatave, with a population in 1926 of 15,022; and Diego Suarez, with 8604. The former is the principal port on the east coast and the latter in the north. Education is compulsory from 8 to 14 years of age. On Sept. 15, 1925, there were 991 official schools for European and native children, with 90,833 pupils and 1739 teachers, and 517 private schools, with 49,750 pupils and 1144 teachers.

PRODUCTION, ETC. Cattle breeding and agriculture are the chief occupations of the natives of Madagascar. In 1926 there were 3,334,000 acres of land under cultivation. The forests contain valuable woods and gums; resins, dyewoods, and textile plants abound. In 1925 there were 7,659,000 cattle, 386,000 swine, 116,000 sheep, 63,000

goats, and 2900 horses. The acreage and production of the principal crops in 1927-28 were as follows: Corn, 201,000 acres, 4,166,000 bushels; rice, 1,483,000 acres, 51,440,000 bushels; potatoes, 54,000 acres, 4,078,000 bushels; tobacco, 16,000 acres, 22,046,000 pounds; coffee, 45,000 acres, 9,250,000 pounds. Local manufacturing industries are relatively small, including rice milling, sugar grinding, meat packing, and the manufacture of straw hats, simple textiles, mats, lace, etc. The graphite mines are important and gold mining is also carried on. Considerable quantities of mica, corundum, and some iron, copper, and other minerals have been found.

COMMERCE. According to preliminary statistics the total imports in 1927 were valued at \$22,650,000 and total exports at \$14,701,000. These figures compare with imports of \$19,201,000 in 1926 and exports of \$17,362,000. The largest import item is cotton goods.

FINANCE. The budgetary estimates for 1927 aggregated 289,991,138 francs for the receipts and the same amount for expenditures. The local revenue is derived chiefly from direct and indirect taxation, customs, post offices, and markets.

COMMUNICATIONS. In 1926, entrances in foreign and coastwise trade combined totaled 5773 vessels of 2,521,000 net registered tons, discharging 198,513 metric tons of cargo; clearances, 6000 vessels of 2,545,000 tons, taking cargo of 277,890 metric tons. The Madagascar Government Railways were built and are entirely operated by the colonial government. The length of line in operation in July, 1927, totaled 429 miles, of which 324 miles were main lines and 105 miles branches. The rolling stock in operation comprised 65 locomotives, 46 passenger cars, and 426 freight cars. Due to excessive cost of fuel, the Government planned to electrify a large part of the line.

GOVERNMENT. The colony is under a governor-general aided by a consultative council of administration. Governor-general in 1928, Marcel Oliver (appointed Jan. 11, 1924). Dependent upon Madagascar are the small islands of Nossi Be, Diego Suarez, Ste. Marie, and the Comoro group.

See also ANTHROPOLOGY under *Old-World Ethnography*.

MADDEN, MARTIN BARNABY. American politician, member of the National House of Representatives from Illinois, died at Washington, D. C., April 27. Born at Darlington, England, Mar. 20, 1855, he was taken to the United States at the age of four. His parents settled on a farm at Lemont, Ill. When ten years old he was apprenticed to a stonemason and he remained in that business, rising in time to become president of the Western Stone Company, president of the Quarry Owners' Association of America, and vice president of the Builders' and Traders' Exchange of Chicago, Ill. He entered political life in 1889 as a member of the Chicago City Council and retained that office until 1897. He was the Republican candidate for United States Senator from Illinois in 1897, but was defeated. In 1905 he was elected to the National House of Representatives from the First Illinois District and was reelected at each biennial election. He concerned himself chiefly with financial matters and was chairman of the House Committee on Appropriations.

MAENTWROG DAMS, WALES. See DAMS.

MAINE. POPULATION. According to the Fourteenth Census, the population of the State on

Jan. 1, 1920, was 768,014. The estimated population on July 1, 1928, was 795,000. The capital is Augusta.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Potatoes	1928	172,000	37,840,000	\$15,136,000
	1927	161,000	37,852,000	31,749,000
Hay	1928	1,248,000	1,597,000 ^a	18,165,000
	1927	1,260,000	1,538,000 ^a	19,482,000
Oats	1928	120,000	4,200,000	2,940,000
	1927	124,000	4,588,000	3,120,000

^a tons.

MINERAL PRODUCTIONS. A slackening in the production of stone and of sand and gravel in 1926 was approximately offset by an increase in the output of lime and that of crude feldspar. Stone remained the leading mineral product, the quantity quarried in 1926 being 311,830 short tons, and that in 1925, 361,570; the value, for 1926, \$2,360,593 and for 1925, \$2,870,442. The production of lime was 128,120 tons in 1926, and declined to about 116,000 tons for 1927; in value, \$1,615,776 for 1926 and for 1927, \$1,364,000 (estimated). Producers of slate sold a total of \$549,952 in 1927, as against \$662,184 in 1926. Feldspar production of 1926 had a total value of \$306,695. Clay and its products, mica, and silica were produced in minor amounts. The total mineral production of the State was, for 1926, \$5,785,619; for 1925, \$5,838,718.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$11,133,604 (of which \$2,179,063 was aid to local education); for conducting public service enterprises, \$142,802; for interest on debt, \$826,208; for permanent improvements, \$8,006,992; total, \$20,109,606 (of which \$10,396,000 was for highways, \$2,677,875 being for maintenance and \$7,718,125 for construction). Revenues were \$17,419,442. Of this, property and special taxes formed 39.4 per cent; departmental earnings and charges for officials' services, 7.9 per cent; sales of licenses and the tax on gasoline, 42.9 per cent. Property valuation was \$724,938,295; State taxation thereon, \$4,879,722. Net State funded debt on June 30, 1927, was \$21,567,699.

TRANSPORTATION. The number of miles of railroad line under operation in the State on Jan. 1, 1928, was 2198.45. There was no increase in the total of railroad line in 1928.

EDUCATION. A general drive in the public schools, according to Commissioner of Education Thomas, writing in the *Journal* of the National Education Association, was carried on for the better teaching of reading and for strengthening the taste for literature. The State promoted the improvement of the appearance of rural schools by coöperating in the embellishment of certain schools selected for demonstration purposes. The school-age population of the academic year 1927-28, as reported by the State Department of Education, was 244,872. There were enrolled in the public schools in that year 160,904 pupils. Of these, 134,760 were in the elementary schools and 26,144 in high schools. Expenditures for public school education totaled \$11,026,642. The yearly salaries of elementary teachers averaged \$879.87; those of high-school teachers, \$1517.74.

CHARITIES AND CORRECTIONS. The State De-

partment of Public Welfare, as operating in 1928, was a central supervisory body of five nominated members, serving on per-diem compensation, and concerning itself with some 51 welfare institutions deriving support entirely or partly from the State. There were, under a board of hospital trustees, three State hospitals, at Augusta, Bangor, and West Pownal, for the insane. Under a separate board were three tuberculosis sanatoria, at Hebron, Fairfield, and Presque Isle. The State Prison, at Thomaston, the State Reformatory, for Women, at Skowhegan, and the State Reformatory for Men, at South Windham, were likewise under separate trustee boards. Other institutions were the State School for Girls, Hallowell; the State School for Boys, South Portland; Maine School for the Deaf, Portland; Maine General Hospital, Portland; Maine Institution for the Blind, Portland; Bath Military and Naval Orphan Asylum. Prisoners in the three State penal institutions on Jan. 1, 1928, numbered 384; mental patients in the three State hospitals, 1960; feeble-minded and epileptics in the Pownal State School, 683.

POLITICAL AND OTHER EVENTS. The State development commission, created by act of the legislature in 1927, largely in the original intent of advertising the advantages offered by the State, developed in 1928 much broader activities. It employed an appropriation of \$100,000 to institute a survey of the economic and social life of Maine, with a view to informing inhabitants of the opportunities offered. Flood control, water power, and farm crop diversification were among the topics studied; the University of Maine coöperated in a study of the educational situation. Reports were sought on measures taken in other States and in foreign countries where similar problems existed. The first of what was designed to be a series of annual State economic conferences was held at Bangor May 18-19. The governor and council voted May 12 the transfer of \$10,000,000 from surplus State funds for use, in addition to funds previously authorized, in carrying out a large State road-building programme. Early in the summer a bridge over the Kennebec River at Bath was put into service, replacing the ferry. Orr's and Bailey's islands were connected by bridge and causeway.

ELECTION. In the National election of November 6, the popular vote of the State gave the Republican candidates, Hoover and Curtis, a majority of more than two to one. The Republican and the Democratic totals were each about 40,000 higher than the corresponding totals in the National election of 1924. At the State election on September 10, were elected a Governor, other State officers, one United States Senator, four Representatives, and a legislature. The Republican ticket won in all cases. William Tudor Gardiner was elected Governor, defeating E. C. Moran, Jr., Democrat. Frederick Hale, Republican, was reelected United States Senator, over Herbert E. Holmes, Democrat, the vote being: Hale, 145,501; Holmes, 63,429. Four Republicans were elected to the House of Representatives. The Democrats lost their single seat in the State Senate, and in the Assembly their seats were cut down to 16, from 22. The presidential vote was: Hoover (Rep.), 179,923; Smith (Dem.), 81,179.

OFFICERS. Governor, R. O. Brewster; Secretary of State, Edgar C. Smith; Treasurer, William S. Owen; Auditor, E. D. Hayford; Attor-

ney-General, Raymond Fellows; Commissioner of Education, Augustus O. Thomas; Adjutant-General, James W. Hanson; Chairman Public Utilities Commission, Charles E. Gurney.

JUDICIARY. Supreme Judicial Court; Chief Justice, Scott Wilson; Associate Justices, Warren C. Philbrook, Charles J. Dunn, Luere B. Deasy, Guy H. Sturgis, Charles P. Barnes, Norman L. Bassett, and William R. Pattangall.

MAINE, UNIVERSITY OF. A coeducational State institution of higher education at Orono, Maine, founded in 1865. The enrollment for the college year 1928-29 was 1390 and for the summer session of 1928, 315. There were 224 members of the faculty in the autumn of 1928, divided as follows: Teaching and administration, 150; agricultural extension service, 48; and experiment station, 26. The productive funds of the University amounted to \$866,823, and the income for the year to \$933,349. The library contained 87,799 volumes. Rogers Hall, the building of dairy manufactures, named for Dr. Lore A. Rogers, '96, bacteriologist of Washington, D. C., was completed for occupancy during the year and a horticultural building was nearing completion. President, Harold Sherburne Boardman, C.E., D.Eng., LL.D.

MAIZE. See CORN.

MALACCA. One of the STRAITS SETTLEMENTS. Consult that article.

MALAY STATES. See FEDERATED MALAY STATES.

MALDIVÉ ARCHIPELAGO. See CEYLON.

MALINOVSKI. See BOGDANOFF, ALEXANDER ALEXANDROVITCH.

MALLINCKRODT, EDWARD. American chemist and manufacturer, died at St. Louis, Mo., February 1. He was born at St. Louis, Jan. 21, 1845, and was educated at public and private schools, later studying chemistry in Germany. In 1867 he became a member of the firm of G. Mallinckrodt & Company, manufacturers of chemicals. In 1882 the firm was succeeded by the Mallinckrodt Chemical Works, Inc., and Mr. Mallinckrodt became president. He held the office for many years, until he became chairman of the board of directors. He was also president of the National Ammonia Company. He was noted for his philanthropy and gave more than \$1,000,000 to scientific education and to hospitals. His largest single gift was \$500,000 to Harvard University for a building to house the department of chemistry.

MALTA. An island in the Mediterranean Sea, forming, with the adjacent islands of Gozo and Comino, a British colony, lying 58 miles south of Italy and 180 miles from the African coast. Area of the island of Malta, 95 square miles; total area with Gozo and Comino, 122 square miles. Population, according to the census of Apr. 24, 1921, 224,680; civil population, Jan. 1, 1927, 227,440. Valletta is the chief town and port. There were 117 public schools with 23,608 pupils at the beginning of the school year 1926-27; a university with six faculties and 87 students; a lyceum for boys with 375 students; two secondary schools; and 25 technical manual schools. Farming is the principal occupation and the chief products include wheat, potatoes, onions, barley, tomatoes, forage, cotton, grapes, and other fruits. The value of agricultural produce in 1926-27 was £898,414. Stock-raising and fisheries are also of importance. The manufactures include lace, cotton, cigarettes, and filigree. The imports

normally exceed exports, although invisible items of trade such as tourist money, the importance of the island to the British Navy, and as a port of call for merchant steamers, and money sent home by emigrants tend to balance the imports and exports. The imports in 1926 were valued at £4,539,057 and the exports at £1,357,348. Most of the imports come from Great Britain and British possessions. The revenue in 1926-27 was £912,977 and the expenditure, £825,106. Executive power is in the governor and commander-in-chief and legislative power in a legislature of two chambers. Governor and Commander-in-chief in 1928, Gen. Sir John Du Cane (appointed Mar. 16, 1927); Prime Minister, Police, and Posts, Sir G. Strickland; Health, R. V. Galea; Education, A. Bartolo; Justice, A. Parnis; Industry and Commerce, W. Salomone; Public Works, E. P. Vassallo; Treasury, Col. A. Samut.

MALTA (UNDULANT) FEVER. This disease which had gained a foothold in the United States is known to have spread to such an extent that a government survey may be required. Miss Evans of the U. S. Public Health Service Hygienic Laboratory, who has been studying the disease, contracted it herself and hence was unable to make her report in person to the American Public Health Association. As has long been known, Malta fever in man is the same affection as infectious abortion in cattle or at least is due to the same microorganism; and it is possible that a certain amount of abortion in women may be of this origin. It is known that mankind contracts the disease from the milk of milch animals, but where there is infectious abortion in cattle we do not necessarily or usually find undulant fever in mankind. Diagnosis of the disease in the latter is very difficult at first, but the peculiar long course with its many relapses is highly suggestive in the later history and a diagnostic skin test is now being developed.

ABORTUS-MELITENSIS INFECTIONS. This is the title of a paper by Dr. Huddleson of Michigan State College which appears in *Certified Milk* for October, 1928. There are two types of disease each of which is due to the genus of microorganisms known as the *Brucella*. The *Br. melitensis* is responsible for Malta or undulant fever of mankind, known to be endemic in the Southwest of the United States; while the *Br. abortus* is held responsible for infectious abortion in cattle, which is discussed under VETERINARY MEDICINE. Malta fever is usually transmitted by the milk of milch animals which are suffering at the time with mastitis. If the animal should chance to be pregnant, it aborts. But the incidence of infectious abortion differs in occurring in cattle and hogs without any notable transmission to man. In rare instances cases of human transmission have occurred in cowherds, etc. The organism in this case is not distinct from *Br. melitensis*, but several sub-species are known to exist, termed the bovine and porcine strains. The *Br. melitensis* appears to be quite pathogenic to both mankind and the goat; while the other forms which are highly pathogenic respectively to the bovines and pigs are not very pathogenic to man.

MAMMALS. See ZOÖLOGY.

MAMMOTH, SIBERIAN. See GEOLOGY.

MAN, PRIMITIVE. See ANTHROPOLOGY.

MANCHURIA, man-chōō-rē-ā. A vast region in Asia, lying between the Province of Chihli in China proper and the Amur River, extending

eastward from the Hingan Mountains to Korea and the Usuri River; divided into the three provinces of Feng-tien, Kirin, and Heilungkiang. The total area is estimated at about 265,000 square miles and the population estimates vary from slightly under 6,000,000 to almost 30,000,000. A census completed by the research office of the South Manchuria Railway Co. in 1927 reported the population of Manchuria as 27,490,000. This is probably as nearly correct a figure as can be ascertained. Capital, Mukden, with a population of about 250,000. Other important cities are Newchwang, 65,600; Yingkow, 60,000; An-tung, 74,600; and Chang-chun, 80,000.

The soil of Manchuria generally is of almost exhaustless fertility and it possesses immense potential resources in agriculture, timber, and mineral wealth. In 1920 the total production of north Manchuria alone was estimated at a value of \$320,000,000. Soya beans, wheat, millet, and kaoliang are the principal crops raised, but the cultivation of sugar beets and the breeding of livestock are of growing importance. While industrially undeveloped, there are in larger cities modern flour mills, bean-oil mills, soap works, sugar refineries, sawmills, distilleries, breweries, glass factories, and tanneries. Although the population of Manchuria constitutes but 6 per cent of the population of China, in 1925 Manchuria's total trade constituted 30 per cent of the total Chinese trade.

The number of immigrants who entered Manchuria from other sections of China during the fiscal year ending Mar. 31, 1928, were estimated at about 1,500,000 while the combined import and export trade of Manchuria during the period amounted to 662,000,000 haikwan taels, or an increase of 15,000,000 taels over the total for the previous year and double the value of the trade ten years ago. Manchurian railways carried 2,000,000 tons more cargo than in the fiscal year ended Mar. 31, 1927. The president of the South Manchuria Railway reported that for the fiscal year ended Mar. 31, 1928, the gross receipts of the company from all its activities amounted to 230,000,000 yen and expenditures to 194,000,000 yen leaving a profit of 36,000,000 yen as compared with 34,000,000 yen the previous year. Revenues from railway services were 113,000,000 yen and operating expenses 39,000,000, or an increase of 5,300,000 in revenue and a decrease of 6,800,000 in operating expenses as compared with figures for the preceding year. The company's gross receipts from other items than railway services amounted to 117,000,000 yen as against expenditures of 154,000,000, or a net loss of 37,000,000 yen.

For the adherence of the Manchurian Government to the new Nationalist régime in China, consult the historical section of the article, CHINA.

MANDATES. See LEAGUE OF NATIONS.

MANGANESE. The domestic shipments of manganese ore containing 35 per cent and more of metallic manganese in 1928, totaled approximately 45,000 long tons, valued at \$1,197,000, according to preliminary figures compiled by the U. S. Bureau of Mines. The 1927 shipments amounted to 44,741 tons, valued at \$1,151,918. The shipments of metallurgical ore amounted to 30,000 tons, valued at \$561,000, while those of 1927 were 27,730 tons, valued at \$446,781. The shipments of chemical ore in 1928 amounted to 15,000 tons, valued at \$636,000, while those of

1927 were 17,011 tons, valued at \$705,137. The plant owned by the Domestic Manganese and Development Co. was put in operation during March and treated rhodochrosite ore from the Emma mine at Butte, Mont., operated by the Anaconda Copper Mining Co. It produced 11,118 tons of calcined and nodulized material containing 56.45 per cent manganese. This quantity was derived from 18,000 to 19,000 tons of crude carbonate ore. Arkansas' shipments of high-grade ore increased from 2605 tons in 1927 to 3800 tons in 1928. There was a large increase in shipments of high-grade ore from Georgia, and a large decrease in shipments from Idaho. No high-grade shipments were reported for Nevada in 1928.

There was a record production of steel in 1928, estimated at 51,400,000 tons of ingots and castings, and a consequent demand for ferromanganese and in turn for manganese ore. The estimated production of ferromanganese in 1928 was given in the *Iron Trade Review* of Jan. 3, 1929, as 316,000 tons, compared with 294,991 tons in 1927, and second only to the outputs of 1918 and 1926. The domestic production of manganese ore, however, was little changed in 1928, and imports decreased from 622,067 tons of ore in 1927 to approximately 420,000 tons for the entire year. At the rate of manganese-ore consumption per ton of ferromanganese produced, reported by ferromanganese producers in 1927, the domestic production of ferromanganese in 1928 required approximately 632,000 tons of manganese ore. Assuming that the amount of manganese ore imported for chemical uses was offset by the quantity of metallurgical manganese ore produced in the United States in 1928, approximately 420,000 tons of ore was available for metallurgical uses in 1928, 212,000 tons less than was required by the producers of ferromanganese. Most of this tonnage was accounted for by the decrease in the quantity of manganese ore in bonded warehouse, officially reported as 183,477 tons of manganese content on Dec. 31, 1927, and 96,918 tons on Oct. 31, 1928, a decrease of 86,559 tons of manganese content, equivalent to at least 173,000 tons of manganese ore. The remainder of the ore required, between 35,000 and 40,000 tons, must, therefore, have been drawn from stocks at the plants of consuming companies.

The shipments of domestic ore containing from 10 to 35 per cent of manganese (ferruginous manganese ore) in 1928 were 87,000 tons, valued at approximately \$391,000, as compared with 148,291 tons, valued at \$673,921 in 1927. The domestic shipments of ore containing from 5 to 10 per cent of manganese (manganiferous iron ore) in 1928 were 1,090,000 tons, valued at \$2,640,000, as compared with 1,310,127 tons, valued at \$3,270,460, in 1927. The decrease in shipments of ferruginous manganese ore was contributed to mainly by Colorado, Georgia, Michigan, and New Mexico. The apparent decrease in shipments of manganiferous iron ore was due to the falling below 5 per cent manganese content of ore in Wisconsin that contained over 5 per cent in 1927. Shipments from Minnesota, 1,029,000 tons in 1928, showed an increase over the 934,599 tons shipped in 1927.

MANITOBA, mǎn't-tō'bǎ. The most eastern of the Prairie Provinces of Canada, situated west of the Province of Ontario and Hudson Bay and east of the Province of Saskatchewan, extending from the American boundary north to latitude 60°. Area, 251,832 square miles; population, ac-

cording to the census of 1921, 610,188; 1926, 639,056. Capital, Winnipeg, with a population in 1921 of 179,087 (Greater Winnipeg, 230,000); Brandon, 15,359; St. Boniface, 12,821; Portage la Prairie, 6748. The movement of population in 1926 was: Births, 14,627; deaths, 5317; marriages, 4496. In 1926 there were 4067 teachers and 148,279 pupils in the 3956 public class rooms. There are 42 high schools, 9 junior high schools, 11 collegiate departments, and 13 collegiate institutes. For higher education there is the University of Manitoba at Winnipeg, with 2458 students enrolled for the full courses.

The estimated area of arable land in Manitoba is 25,000,000 acres of which about 30 per cent is under cultivation. In 1925 the mineral output, consisting mainly of building material and gypsum, was valued at \$2,276,759. Other important resources are forest and fisheries. In August, 1926, there were 682 grain elevators in Manitoba with a capacity of 25,430,000 bushels. The revenue in 1927 was \$11,238,570 and the expenditure, \$10,531,929. The total funded debt on Apr. 30, 1926, \$72,882,803. The railway mileage was 4610 miles in 1927.

The government consists of a lieutenant-governor appointed by the governor-general of Canada and a legislative assembly consisting of 55 members elected for five years. Women have the right to vote and are eligible to election to parliament. Manitoba is represented in the Dominion Parliament by six members in the Senate and 17 in the House of Commons. Lieutenant-Governor in 1928, Theodore A. Burrows; Premier, President of the Council, Treasurer, Telephones and Telegraphs, John Bracken; Education, R. A. Hoey; Agriculture, Immigration, and Railways, A. Prefontaine; Lands Commissioner and Provincial Secretary, A. Prefontaine; Health and Public Welfare, Edward W. Montgomery; Public Works, W. R. Clubb; Attorney-General, W. J. Major; Municipal Commissioner, D. L. McLeod. As a result of the elections of August, 1927, the party grouping was as follows: Progressive (Government), 29; Conservative, 16; Liberal, 7; Labor, 3; Independent, 1.

MANNERS, JOHN HARTLEY. Anglo-American playwright, died at New York, December 19. Born at London, Aug. 10, 1870, he first appeared on the stage in *The Squire of Dames*, at Melbourne, Australia, Feb. 19, 1898, and thereafter played in London and the United States until 1905. Having acted in England in his own play, *The Crossways*, he brought the company to New York in 1902, where he remained until his death. Mr. Manners gave up the stage for writing, and on Dec. 20, 1912, his comedy, *Peg o' My Heart*, in which his wife, Laurette Taylor, starred, opened on Broadway, proving one of the most popular plays produced in a number of years; it ran until May 30, 1914, and was frequently revived, and played in many languages, and in 1924 there appeared a successful musical comedy version, *Peg o' My Dreams*. Among Mr. Manners's earliest work was the dialogue for *Sweet Nell of Old Drury* (1900), and he wrote, or collaborated in, about 30 other plays, including: *A Queen's Messenger*; *As Once in May*; *The Girl in Waiting*; *Zira*; *The House Next Door*; *the Woman Intervenes*; *A Marriage of Reason*; *The Panorama of Youth*; *The Day of Dupes*; *Just as Well*; *The Harp of Life*; *Barbaraza*; *The Money Moon*; *The Patriot*; *The Prince of Bohemia*; *The Majesty of Birth*; *Ganton & Co.*; *The Girl and the*

Wizard; *All Clear*; *Out There*; *God of My Faith*; *God's Outcast*; *Wreckage*; *Happiness*; *The Wooing of Eve*; *Hate with a Will to Victory*; *One Night in Rome*; and the last of Mr. Manners's plays to be produced, *The National Anthem*, which appeared Jan. 23, 1923.

MANSFIELD, SAMUEL MATHER. American soldier and engineer, died at Boston, Mass., February 18. He was born at Middletown, Conn., Sept. 23, 1839, and was graduated from the U. S. Military Academy in 1862. He was commissioned in the Army as a second lieutenant in the Engineer Corps, and served in the Civil War in the Twenty-fourth Connecticut Infantry, winning promotion for gallantry. He was an expert engineer, and after the war was assigned by the War Department to important works, especially in connection with fortifications and lighthouse construction. In 1885 and 1887 he was president of the commission which determined the boundary line between the Indian Territory and Texas, and in 1898-99 he was president of the California Commission to Regulate Hydraulic Mining. In 1906, three years after his retirement from the U. S. Army with the rank of brigadier general, he was appointed chairman of the Massachusetts Harbor and Land Commission. He also served as president of the Yosemite National Park Commission in 1899.

MANTELL, ROBERT BRUCE. American actor, died at Atlantic Highlands, N. J., June 27. He was born at Irvine, Scotland, Feb. 7, 1854. His parents intended him for the law, but he made so little progress in his studies that they decided on a commercial career for him and apprenticed him to a wine merchant. During his apprenticeship he happened to take part in some amateur theatrical performances, and, meeting with unexpected success, developed a desire to become an actor. His parents opposed him in this, and at the age of twenty he left home and took passage for Boston. Failing to obtain an engagement there, he returned to England in two weeks. He joined a theatrical company under the management of Richard Edgar and made his debut Oct. 21, 1876, at Rochdale, Lancashire, as the sergeant in *Arrah-na-Pogue*. His next important rôle was Father Doolan in *The Shaughran*. He toured the English provinces with Charles Matthews, Barry Sullivan, and Dion Boucicault until 1878, when he returned to America and played juvenile rôles in the company of Mme. Modjeska. His first appearance in London was in July, 1880, at Saddlers Wells Theatre. He visited America again in 1882, touring the country in *Romany Rye*, in which he appeared as Jack Hearn. In 1883 he played in *Fedora* with Fanny Davenport. Later he became a star and appeared at the head of his own company in a large repertory of classical and romantic plays, including *Hamlet*, *Richard III*, *Othello*, *Macbeth*, *Romeo and Juliet*, *The Corsican Brothers*, *The Lady of Lyons*, and *Richelieu*. In his later years he confined himself almost exclusively to Shakespearean rôles. He appeared in New York in revivals of *King Lear* and *Macbeth* in 1905 and in 1911, and had a successful season in 1915 in repertory. In January, 1909, William Winter, the famous critic, called Mr. Mantell "the best tragic actor on the American stage." After 1915 Mr. Mantell appeared also in motion pictures, without, however, relinquishing his work on the stage.

MANUFACTURING. See BUSINESS REVIEW.
MANURES. See FERTILIZERS.

MANX LANGUAGE AND LITERATURE. See PHILOLOGY, MODERN.

MARATHONS. See OLYMPIC GAMES.

MARCH, FRANCIS ANDREW, JR. American educator, died at Easton, Pa., February 28. He was born at Easton, Mar. 2, 1863, the son of the late Prof. Francis Andrew March, famous philologist, and a brother of Gen. Peyton C. March, chief of staff of the U. S. Army during the World War, of Alden March, of the *New York Times* staff; and of Prof. John Lewis March, of Union College. Professor March was graduated from Lafayette College in 1881, and from 1882 until his death was a member of the teaching staff of the college, successively as tutor in modern languages, 1882-84; adjunct professor of English literature, 1884-91; professor of the same subject, 1891-1905; and professor of the English language, from 1905 until his death. He was editor-in-chief of the *Thesaurus Dictionary of the English Language*, as his father had been; he having been associated with his father in the preparation of that monumental work. He was active in civic work and was mayor of Easton, 1903-05. He wrote: *History of the World War* (1918); (with R. J. Beamish) *America in the World War* (1919); *Athletics at Lafayette College* (1926).

MARIE, mǎ'rĕ. Dowager Empress of Russia and widow of Czar Alexander III, died at her birthplace, Copenhagen, October 13. She was born Nov. 26, 1847, the second daughter of King Christian IX and Queen Louise of Denmark, and she married Czar Alexander III, Nov. 9, 1863, having her name changed from Marie Sophia Frederica Dagmar, to Maria Feodorovna, when she entered the Greek church. Her elder sister became Queen Alexandra of England, and one of her brothers was the late King George of Greece. Empress Marie advised the Czar to liberalize the government, but she could not overcome the court's opposition, and her husband's fear of assassination. When her son, Nicholas II, ascended the throne after his father's death, Nov. 1, 1894, the Empress Dowager again desired to institute democratic reforms, even before the revolution of 1905, recommending that the Czar should grant the people a constitution. She was living in Denmark when the Bolsheviks slaughtered the Russian royal family in 1918, and, refusing to believe in the tragedy, she waited in Copenhagen until her death, expecting Nicholas II to escape and join her.

MARIETTA COLLEGE. A non-sectarian, co-educational college at Marietta, Ohio, founded in 1835. The autumn term of 1928 had a total registration of 393 students, of whom 239 were men and 154 were women. The faculty numbered 37, three new members having been added in 1928. The productive funds amounted to \$1,264,811, and the income for the year to \$147,534. The library contained approximately 94,365 volumes. The new Betsey Mills Club containing a fully equipped women's gymnasium with swimming pool was the centre for the physical education work of the young women of the College, and a Field House for men, to cost \$200,000, was under construction during the year. The Alumni contributed \$6246 to the current expenses of the College, through the Marietta Fund. President, Edward Smith Parsons, A.M., L.H.D.

MARINE CORPS, U. S. N. See NAVAL PROGRESS.

MARINE DISASTERS. See SAFETY AT SEA.

MARINE ENGINES. See INTERNAL COMBUSTION ENGINES; SHIPBUILDING.

MARITIME PROVINCES. The name applied to the three Canadian provinces of Nova Scotia, New Brunswick, and Prince Edward Island. Consult those articles.

MARKETS, MARKETING. See AGRICULTURE; AGRICULTURE, UNITED STATES DEPARTMENT OF; COÖPERATION.

MARQUETTE UNIVERSITY. A coeducational institution of higher learning, under Roman Catholic direction, at Milwaukee, Wisconsin, organized as a college in 1881 and chartered as a university in 1907. It comprises the following colleges and schools, for which registration of regular students in the autumn of 1928 is also given: Graduate school, 185; liberal arts, 941; business administration, 323; dentistry, 164; applied science and engineering, 495; journalism, 148; law, 237; medicine, 360; music, 34; speech, 2 (with 1055 students enrolled in speech courses from other schools and colleges); and nursing. In addition, there were 280 students in night courses in business administration, 22 in dental hygiene, 426 in the high school, 167 in the music academy, 85 in nursing courses, and 328 in teachers' courses, making a grand total of 4233 in the University. The registration for the 1928 summer session was 796. The faculty in the autumn numbered 379 members. Endowment funds amounted to \$2,623,241, and the income for the year to \$1,130,606, from the following sources: Endowment income, \$148,897; tuition, \$750,292; from private benefactions for increase of plant, \$12,066; for increase of endowment, \$34,042; for current expenses, \$5279; miscellaneous, \$180,029. The University also had the services of Jesuit instructors and administrative officers who received no compensation other than maintenance, the value of their services over the cost of their maintenance in 1926-27 being estimated at \$119,500. The library contained 47,700 volumes. President, the Rev. William M. Magee, S.J., A.M., LL.D.

MARRIAGE AND DIVORCE. That the so-called low marriage rate and high divorce rate were not alarming manifestations of the decline of modern American life was ably demonstrated by Dr. I. M. Rubinow, in a review of the subject in *Current History* for November. Dr. Rubinow cited the following figures to prove that the marriage rate was steadily going up:

Five-year period	Marriage rate per thousand
1892-1896.....	8.92
1897-1901.....	9.12
1902-1906.....	10.07
1907-1911.....	10.14
1912-1916.....	10.47
1917-1921.....	10.90
1922-1926.....	10.46

Not only were people getting married in greater numbers but they were staying married. In 1890, of the total male population, 34.9 per cent were married; in 1900, 36 per cent; in 1910, 38 per cent; in 1920, 40.5 per cent. For females, the figures were: 1890, 36.4 per cent; 1900, 37.1 per cent; 1910, 39.6 per cent; 1920, 41.3 per cent. It must not be forgotten that the female and male populations contain large numbers of persons of unmarriageable age. Dr. Rubinow believes, and quite plausibly, that an index should be calculated not on the basis of the whole population but on the number of persons of marriageable age, and this he puts at 25

TABLE I—MARRIAGES IN THE UNITED STATES 1926-27

Division and State	1927	1926	Per cent of increase ^a	Number per 1,000 of the population	
				1927	1926
United States	1,200,694	1,202,574	— 0.2	10.12	10.27
New England:					
Maine	6,279	6,376	— 1.5	7.9	8.1
New Hampshire	4,847	4,620	4.9	10.7	10.2
Vermont	2,766	2,805	— 1.4	7.8	8.0
Massachusetts	30,408	30,584	— 0.6	7.2	7.3
Rhode Island	5,461	5,329	2.5	7.8	7.7
Connecticut	12,063	12,285	— 1.8	7.4	7.6
Middle Atlantic:					
New York	118,719	120,965	— 1.9	10.4	10.7
New Jersey	28,316	28,424	— 0.4	7.6	7.7
Pennsylvania	71,130	72,222	— 1.5	7.3	7.5
East North Central:					
Ohio	59,296	55,147	7.5	8.8	8.4
Indiana	41,112	40,409	1.7	13.1	12.9
Illinois	80,222	82,529	— 2.8	11.0	11.5
Michigan	36,276	39,788	— 8.8	8.1	9.1
Wisconsin	16,818	16,654	1.0	5.76	5.77
West North Central:					
Minnesota	23,328	23,713	— 1.6	8.7	8.9
Iowa	21,048	20,966	0.4	8.68	8.65
Missouri	37,298	37,722	— 1.1	10.6	10.8
North Dakota	3,973	3,958	0.4	6.20	6.17
South Dakota	6,004	6,004	0.0	8.6	8.7
Nebraska	9,800	9,682	1.4	7.02	6.98
Kansas	19,800	20,253	— 2.2	10.8	11.1
South Atlantic:					
Delaware	1,154	1,109	4.1	4.7	4.6
Maryland	25,025	25,331	— 3.1	15.7	16.4
District of Columbia	5,543	5,514	0.5	10.3	10.4
Virginia	22,163	21,345	3.8	8.7	8.5
West Virginia	19,287	18,275	5.5	11.4	10.9
North Carolina	22,304	22,691	— 2.1	7.7	7.9
South Carolina	25,433	23,971	6.1	13.8	13.1
Georgia	30,447	28,484	6.9	9.07	9.07
Florida	21,222	28,446	— 25.4	15.6	21.6
East South Central:					
Kentucky	30,231	28,585	5.8	11.9	11.3
Tennessee	33,613	32,692	2.8	13.5	13.3
Alabama	23,296	30,103	— 2.7	11.5	11.9
Mississippi	29,641	28,712	3.2	16.6	16.0
West South Central:					
Arkansas	26,716	28,250	— 5.4	13.0	14.8
Louisiana	19,941	20,751	— 3.9	10.3	10.8
Oklahoma	28,656	27,276	5.1	12.0	11.6
Texas	74,042	69,902	5.9	13.7	13.2
Mountain:					
Montana	5,356	5,183	3.3	9.8	9.4
Idaho	4,501	4,404	2.2	8.43	8.44
Wyoming	1,818	1,911	— 4.9	7.5	8.1
Colorado	11,969	11,957	0.1	11.1	11.3
New Mexico	4,748	4,476	6.1	12.1	11.5
Arizona	4,959	4,077	21.6	10.8	9.2
Utah	5,717	5,427	5.3	11.0	10.6
Nevada	2,398	1,228	95.3	31.0	15.9
Pacific:					
Washington	18,801	17,810	5.6	12.0	11.6
Oregon	7,362	7,085	3.9	8.3	8.1
California	53,487	56,664	— 5.6	12.1	13.1

^a A minus sign denotes decrease.

years. Thus examined, the figures show that the proportion of married men increased from 72 per cent in 1900 to 74 per cent in 1920. As for the women, the proportions were 70 per cent in 1900 and 71 per cent in 1920. Similarly, the proportion of married men and women between the ages of 20 and 25 has increased. For men, the figure was 21.6 per cent in 1900 and 28 per cent in 1920. For women, the figure was 46.6 per cent in 1900 and 52.3 per cent in 1920. In the field of divorce, Dr. Rubinow's original examinations leave much to be heartened us. He points out that divorces have increased from 27,919 in 1887 to 330,853 in 1926 and that the rates have increased from 47 per 100,000 population in the earlier year to 152 in the later.

He further points out that 5.5 divorces took place in 1887 for every 100 marriages performed and that by 1926 the ratio was 15 divorces per 100 marriages. But this does not mean that one out of every six marriages is dissolved. What, in fact, is the probability of a marriage going on

the rocks? There are no statistics, of course, so the writer resorts to estimates. Marriages are terminated in the following ways: by death, by divorce, or annulment. In 1924, 619,000 married people died and 171,000 divorces took place. In other words, three and one-half marriages were dissolved by death as against one by divorce, or two out of every nine marriages ended in the divorce courts. Says the author: "The true probability of divorce being the conclusion of the happy marriage was, therefore, not one in seven but one in four and a half. And that proportion is constantly rising. It was one in seven in 1910-20 and one in nine in 1900-10." But divorce is a status. How do the figures of those who obtain divorces compare with those who keep them? During the period 1890-1919 about 4,000,000 persons were divorced while in 1919 only about 510,000 persons were recorded as having the status of divorced people. What happened to the 3,500,000? Dr. Rubinow makes this computation for the decade 1910-19:

Number of divorced persons in the beginning of the period	341,000
Number of persons receiving divorce during the period	2,112,000
Total	2,453,000
Approximate number of deaths	150,000
Remaining alive	2,303,000
Number of persons remaining divorced at the end of period	510,000
What became of the balance?	1,793,000

The balance must have married again. These are the proportions: 17 per cent remained divorced, 6 per cent died, and 77 per cent remarried. In other words, Dr. Rubinow concludes, marriage as an institution is not breaking down, but people are getting divorced to remarry, i.e., they are seeking the severance of the original ties because the original marriage was unsuccessful for personal reasons.

CONTRARY VIEWS. On the other hand, alarm was being felt in other quarters at the continued belief that the marriage tie was not so much a sacrament as a means of finding personal happiness. At the Race Betterment Conference, held at Battle Creek, Mich., January 4, Dr. A. S. Warthin, a physician, said that a proper marriage should last at least 25 years "for the child needs the care and counsel of its parents for that length of time." The quadrennial meeting of the Federal Council of the Churches of Christ in America seemed to feel the same way when, in Rochester on December 7, it ordered the printing of a study of marriage called "Ideals of Love and Marriage." This report attacked the companionate marriage as being anti-social. Said the report: "The sex instinct is not to be set free but to be held under control. Marriage should set out to be permanent. Companionate is a noble word, but all that it connotes of comradeship exists between every man and every

TABLE II—DIVORCES AND ANNULMENTS IN THE UNITED STATES—1926-27

Division and State	1927	1926	Divorces			Annulments	
			Per cent of increase ^a	Number per 1,000 of population		1927	1926
				1927	1926		
United States	192,037	180,853	6.2	1.62	1.54	4,252	3,825
New England:							
Maine	1,311	1,213	8.1	1.65	1.54	6	13
New Hampshire	646	608	6.3	1.42	1.34	7	9
Vermont	257	397	-35.3	0.73	1.13	4	4
Massachusetts	3,459	3,307	4.6	0.82	0.79	68	66
Rhode Island	722	702	2.8	1.03	1.01	—	1
Connecticut	1,425	1,232	15.7	0.87	0.77	26	17
Middle Atlantic:							
New York	5,000	4,674	7.0	0.44	0.41	871	964
New Jersey	3,041	2,544	19.5	0.81	0.69	65	63
Pennsylvania	8,084	7,706	4.9	0.83	0.80	56	34
East North Central:							
Ohio	14,646	13,976	4.8	2.18	2.12	77	48
Indiana	8,077	7,685	5.1	2.56	2.46	96	82
Illinois	14,984	14,125	6.1	2.05	1.96	216	204
Michigan	10,525	9,648	9.1	2.34	2.19	86	101
Wisconsin	2,442	2,386	2.3	0.84	0.83	41	44
West North Central:							
Minnesota	2,822	2,784	1.4	1.05	1.05	23	21
Iowa	4,226	4,080	3.6	1.74	1.68	30	22
Missouri	9,651	9,836	-1.9	2.75	2.81	36	35
North Dakota	506	483	4.8	0.79	0.75	8	6
South Dakota	665	589	12.9	0.96	0.85	13	8
Nebraska	1,620	1,395	16.1	1.16	1.01	57	39
Kansas	4,074	3,780	7.8	2.23	2.08	33	15
South Atlantic:							
Delaware	163	201	-19.3	0.67	0.84	2	3
Maryland	2,059	1,883	9.3	1.29	1.19	21	7
District of Columbia	146	96	52.1	0.27	0.18	24	22
Virginia	3,000	3,000	0.0	1.18	1.19	27	19
West Virginia	2,135	1,998	6.9	1.26	1.20	53	44
North Carolina	1,642	1,591	3.2	0.57	0.56	29	20
South Carolina .....	...	...	...	...	...	6	10
Georgia	2,230	2,153	3.6	0.70	0.69	28	38
Florida	4,011	4,012	...	2.94	3.05	17	9
East South Central:							
Kentucky	4,614	4,519	2.1	1.82	1.79	14	7
Tennessee	4,878	4,682	4.2	1.96	1.90	13	14
Alabama	3,734	3,477	7.4	1.46	1.38	8	13
Mississippi	2,893	2,765	4.6	1.62	1.54	8	—
West South Central:							
Arkansas	4,409	4,741	-7.0	2.29	2.49	8	13
Louisiana	1,725	1,856	-7.1	0.89	0.97	16	12
Oklahoma	7,642	7,398	3.3	3.21	3.16	127	130
Texas	17,290	15,472	11.8	3.20	2.91	115	103
Mountain:							
Montana	1,316	1,277	3.1	2.40	2.33	30	15
Idaho	973	921	5.6	1.82	1.76	22	21
Wyoming	627	645	-2.8	2.60	2.75	2	7
Colorado	2,370	2,288	3.6	2.21	2.16	74	74
New Mexico	646	537	20.3	1.65	1.38	7	7
Arizona	888	876	1.4	1.93	1.97	13	10
Utah	981	1,011	-3.0	1.88	1.97	19	33
Nevada	1,953	1,021	91.3	25.23	13.19	39	20
Pacific:							
Washington	4,277	4,134	3.5	2.74	2.69	52	51
Oregon	3,117	3,084	1.1	3.50	3.52	31	35
California	14,135	12,065	17.2	3.19	2.80	1,629	1,282

^a A minus sign denotes decrease.^b Less than one-tenth of 1 per cent.

woman who are well mated. The word is so rich in meaning that it should not be degraded by being fastened to any form of trial marriage, but increasingly associated with permanent and successful marriage."

STATISTICS. The U. S. Cens. & Bureau announced that there were 1,201,94 marriages performed in the United States during the year 1927, as compared with 1,202,574 in 1926. These figures represent a decrease of 1880 marriages, or about one-fifth of one per cent. During the same time there were 192,037 divorces granted in the United States, as compared with 180,853 in 1926, representing an increase of 11,184, or 6.2 per cent. There were 4252 marriages annulled in 1927, as compared with 3825 in 1926. On the basis of population estimates, the number of marriages per 1000 was 10.12 in 1927, as against 10.27 in 1926, and the number of divorces per 1000 was 1.62 in 1927, as against 1.54 in 1926. While the net decreases in the number of marriages performed in the United States as a whole was 0.2 per cent, the relative change in the different States ranged from a decrease of 25.4 per cent in Florida to an increase of 95.3 per cent in Nevada. The increases in Nevada and Arizona were due largely to a change in the marriage law of California, effective July 29, 1927, requiring three days' notice to be given before the issuance of a license. The rate of marriages per 1000 of the population, which represents an average of rates in the individual States, ranged from 4.7 in Delaware and 5.8 in Wisconsin to 16.6 in Mississippi and 31.0 in Nevada. In general, the changes in the number of marriages per 1000 of the population, as shown in the accompanying table, form a more satisfactory index of the trend with regard to marriage in the several States than does the actual number of marriages, because they take account of differences in the rate of increase in the general population.

The changes in the various States as regards the number of divorces compared with the year 1926, ranged from decreases of 35.3 per cent in Vermont and 19.3 per cent in Delaware to increases of 52.1 per cent in the District of Columbia and 91.3 per cent in Nevada. Changes in the laws governing divorces, effective in 1927, were responsible for the figures shown by Vermont and Nevada. In the case of the former, divorces do not become final for six months after the granting of the decree; in the latter, the residence requirement was modified from six to three months. The increase reported by the District of Columbia was due directly to the number of cases held over from 1926. The ratio of divorces per 1000 of the population in the individual States in 1927 ranged from 0.27 in the District of Columbia and 0.44 in New York to 3.50 in Oregon and 25.23 in Nevada. In the accompanying tables from the U. S. Census, the figures for 1927 are preliminary and subject to correction.

MARSHALL, JOHN, CHIEF JUSTICE, ANNIVERSARY. See CELEBRATIONS.

MARTINIQUE, mār'tēnk'. One of the Lesser Antilles group of the West Indies, forming a colony of France. Area, 385 square miles; population, according to the census of 1926, 244,482. Capital and chief port. Fort-de-France, with a population of 40,000. Sugar, rum, cacao, coffee, tobacco, pineapples, and bananas are the chief

products of the Colony. Total imports in 1927 reached \$8,333,000 as compared with \$7,237,000 in 1926. France supplied 56 per cent of the imports in 1927 and the United States, 29 per cent. Imports from the United States were principally coal, flour, lumber, meats, lubricating oil, and automobiles. Exports in 1927 were valued at \$8,991,000 as compared with \$7,197,000 in 1926. The export trade is confined to France and French colonies. Exports of sugar and rum constituted nearly 90 per cent of the value of all exports. The budget for 1926 balanced at 56,146,218 francs. The colony is administered by a governor and a general council, and an elected municipal council; it sends one Senator and two Deputies to the French Parliament.

The tropical hurricane which swept over the French West Indies on Sept. 12, 1928, was the worst in the history of the islands. Martinique fortunately lay south of the central path of the hurricane and, consequently, did not receive the full force of the storm. Loss of life was exceedingly small, but the material damage sustained cannot be estimated. The chief damage was to the fruit and cacao trees and the cane fields. It was expected that the damage to the cane fields would reduce the crop during the refining season beginning in January, 1929, to a point considerably below the average of 40,000 metric tons.

MARYLAND. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 1,449,661. The estimated population on July 1, 1928, was 1,616,000. The capital is Annapolis.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Corn	1928	530,000	19,345,000	\$17,024,000
	1927	515,000	22,660,000	18,128,000
Wheat	1928	530,000	8,745,000	11,106,000
	1927	525,000	9,188,000	11,669,000
Hay	1928	433,000	759,000 ^a	10,239,000
	1927	446,000	737,000 ^a	11,344,000
Tobacco	1928	31,000	21,700,000 ^b	3,906,000
	1927	32,000	26,176,000	6,020,000
Potatoes	1928	47,000	5,405,000	2,702,000
	1927	43,000	5,246,000	5,508,000
Sweet potatoes	1928	10,000	1,500,000	1,200,000
	1927	11,000	1,584,000	1,109,000

^a tons, ^b pounds.

MINERAL PRODUCTION. Coal mining in Alleghany and Garrett counties continued to produce more than one-fourth of the yearly mineral output of the State. The coal production fell to 2,814,842 net tons for 1927, from 3,078,353 tons for 1926; in value, \$5,817,000 for 1927 and for 1926, \$6,800,000. The by-product coke ovens of the State produced in 1927, 1,077,000 short tons of coke; in 1926, 1,120,610 tons. Clay products, second to coal in importance, had a value, for 1926, the latest recorded year, of \$6,073,247; for 1925, of \$2,868,452 exclusive of pottery produced in 1925. The 1926 total included pottery, to a total value of \$3,179,387. Sand and gravel were produced in 1926 to a value of \$3,115,454; in 1925, \$3,500,130. There were quarried in 1926, 1,432,290 short tons of stone; in 1925, 1,136,880; in value, \$2,177,102 for 1926 and for 1925, \$1,853,881. Pig iron production rose to 845,564 long tons for 1927, from 791,637 for 1926. Lime production was somewhat over half a mil-

lion dollars in value, for 1926 as for 1925. The total value of the State's mineral products, duplications eliminated, was for 1926, \$24,066,996; for 1925, \$21,557,810.

FINANCE. State expenditures in the year ending September 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of departments, \$18,109,070 (of which \$3,512,036 was aid to local education); for conducting public service enterprises, \$143,333; for interest on debt, \$1,417,686; for permanent improvements, \$5,133,780; total, \$24,803,869 (of which \$7,793,891 was for highways, \$3,398,224 being for maintenance and \$3,895,667 for construction). Revenues were \$24,439,916; of this, property and special taxes formed 30.4 per cent; departmental earnings, 16.1 per cent; licenses, including gasoline tax, 40.4 per cent. Assessed property valuation was \$2,348,840,482; State taxation thereon, \$5,906,464. Net State indebtedness on September 30, 1927, was \$23,872,776.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 1446.47. There were built in 1928, 9 miles of additional first track.

EDUCATION. The State system of retirement for teachers, enacted in 1927, as reported by State Superintendent Cook in the *Journal* of the National Education Association, passed successfully through the academic year 1927-28, which was the first year of its application. The estimated school-age population (from 5 to 17 years) in that year was estimated at 388,462, of which the colored element was 68,945. There were enrolled in the public schools 270,900 pupils, 220,413 being white and 50,487 colored. Those enrolled in elementary schools numbered 234,008; those in high schools, 36,892, of whom 3289 were colored. Expenditures for public-school education in the year were: current, \$16,912,730.75; outlay, \$6,505,422.89. Salaries of teachers averaged: white, \$1477 per annum; colored, \$1062; all, \$1408.

CHARITIES AND CORRECTIONS. The Department of Charities and Corrections, as operating in 1928, was the central agency of the State with regard to institutions for the care or custody of persons. It supervised institutions, public and private, investigated applications for State aid, and administered certain of the laws as to the placement of children. In addition to a large number of State-aided institutions, there were the following institutions entirely supported by State appropriations: Maryland Penitentiary, Baltimore; House of Correction, Jessups; Crownsville State Hospital, Crownsville; Eastern Shore State Hospital, Cambridge; Rosewood State Training School, Owings Mills; Spring Grove State Hospital, Catonsville; Springfield State Hospital, Sykesville; Maryland Tuberculosis Sanatorium, Henryton and Mt. Wilson (two branches); Maryland School for the Deaf, Frederick; Maryland Training School for Boys, Loch Raven; Montrose School for Girls, Woodensburg. There were 2095 prisoners in State penal institutions on Jan. 1, 1928.

POLITICAL AND OTHER EVENTS. Financial irregularities among the employees of the State road commission, first discovered in the cases of four who pleaded guilty and received prison sentences in April, were subjected to investigation. Shortages and misappropriations said to be likely to run to several hundred thousand dollars were discovered. An act passed by the State general

assembly of 1927, requiring oyster packers and carriers to render to the conservation commission 10 per cent of the shells of oysters used, was contested and was sustained by decision of the State court of appeals April 19. The shells were sought by the state for planting purposes. The widening of the Washington Boulevard between Baltimore and Washington to 40 feet was started at the beginning of July. The inadequacy of Baltimore Harbor for the accommodation of vessels drawing 30 feet or more was made the basis of demands made of the Army engineers in March for deeper channels and anchorages. An appropriation of \$1,500,000 previously authorized by the legislature to provide Baltimore with an airport was maintained by some of the city authorities to be insufficient, and an expenditure of from \$3,000,000 to \$4,000,000 was proposed in July. Fort McHenry, memorable for its part in the second war with England, was restored to its condition of that period, for a celebration held on Defenders' Day, September 12. The Pennsylvania Railroad broached to the city council in May a plan for the construction of an elevated structure and lateral tunnel at a cost of \$22,000,000 to carry its traffic through the city.

ELECTION. The State cast on November 6 a vote far in excess of any in its previous record. The increase was divided between the two National tickets, but the Republican obtained the greater share. In consequence, while Smith and Robinson (Democratic) received a popular vote approximately that of Harding in 1920, the Republican candidates, Hoover and Curtis, won the State by an ample margin. The presidential vote was: Hoover (Rep.), 301,479; Smith (Dem.), 223,626. Senator William Cabell Bruce, Democrat, was defeated for reelection, his Republican opponent, Phillips Lee Goldsborough, being elected for the ensuing regular term. Four Democrats and two Republicans were elected to the House of Representatives.

OFFICERS. Governor, Albert C. Ritchie; Secretary of State, David C. Winebrenner, 3d; Treasurer, J. M. Dennis; Auditor, L. M. Milbourne; Comptroller, William S. Gordy, Jr.; Attorney-General, T. H. Robinson; Superintendent of Schools, Albert S. Cook.

JUDICIARY. Court of Appeals: Chief Judge, Carroll T. Bond; Associate Judges, John R. Pattison, T. Scott Offutt, Wm. H. Adkins, Francis N. Parke, Hammond Urner, W. M. Digges, D. Lindley Sloan.

MARYLAND, UNIVERSITY OF. A coeducational, State institution of higher learning at College Park and Baltimore, Md., founded in 1807. The enrollment for the autumn term of 1928 was 3391, distributed as follows: Agriculture, 140; arts and sciences, 573; dentistry, 383; education, 141; engineering, 260; graduate school, 85; home economics, 51; pharmacy, 368; law, 251; medicine, 411; and nursing, 102. The enrollment for the 1928 summer school, at College Park, was 626. The faculty in 1928 numbered 445. The total income from appropriations and other receipts amounted to \$2,344,660. The library contained 52,473 volumes. During the year many improvements were made in roads and walks and in landscaping the campus. President, Raymond A. Pearson, M.S., D.Agr., LL.D.

MASSACHUSETTS. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 3,852,356. The population by the State census of 1925 was 4,144,205.

The estimated population on July 1, 1928, was 4,290,000. The capital is Boston.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Hay	1928	472,000	732,000 ^a	\$13,889,000
	1927	479,000	687,000 ^a	14,341,000
Potatoes	1928	15,000	1,620,000	1,458,000
	1927	14,000	1,400,000	2,170,000
Tobacco	1928	7,600	9,462,000 ^b	3,225,000
	1927	7,100	8,683,000 ^b	3,099,000
Corn	1928	45,000	1,890,000	2,457,000
	1927	46,000	1,886,000	2,263,000
Cranberries	1928	13,900	325,000 ^c	4,875,000
	1927	13,900	370,000 ^c	4,625,000

^a tons, ^b pounds, ^c barrels.

MINERAL PRODUCTION. Stone continued much the most important mineral product. In 1926 it yielded 2,089,340 short tons, exclusive of red sandstone production, as compared with 2,209,560 in 1925; in value, the production was: 1926, \$6,216,793; 1925, \$6,640,333. Clay products rose to a total of \$3,971,586 for 1926, from \$3,739,164 for 1925. The sand and gravel production was: 1926, 2,969,172 short tons; 1925, 3,349,091. In value, it was \$3,276,787 for 1926 and for 1925, \$3,116,323. Of lime there were sold by producers in 1927, 181,000 short tons (estimated), and in 1926, 202,065; in value, \$2,322,000 (estimated) in 1926 and in 1925, \$2,653,746. The Total value of the State's mineral products, duplications eliminated, was \$16,786,577 for 1926; for 1925, \$16,831,529.

FINANCES. State expenditures in the year ending November 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of departments, \$40,695,503 (of which \$2,445,048 was for local education); for conducting public service enterprises, \$183,994; for interest on debt, \$1,610,420; for permanent improvements, \$7,084,660; total, \$49,574,577 (of which \$12,403,325 was for highways, \$7,430,036 being for maintenance and \$4,973,289 for construction). Revenues were \$60,146,822; of these, property and special taxes formed 51.2 per cent; departmental earnings, 6.6 per cent; sale of licenses, 26 per cent. Assessed property valuation was \$7,076,313,505; State taxation thereon, \$12,000,000. Net State indebtedness on Nov. 30, 1927, was \$22,103,085.

TRANSPORTATION. The total number of miles of railroad line under operation in the State on Jan. 1, 1928, was 2018.65. There were built in 1928, 8.65 miles of additional second track.

EDUCATION. In connection with the educational system of the State, the preliminary work was carried out for the erection of a new plant for the Massachusetts School of Art, reported to be the only art school in the United States supported wholly by State funds. The building, according to report in the *Journal* of the National Education Association, was to supply provision for the training of teachers in the fine and industrial arts. Over \$15,000,000 was spent in the State during the year 1928 for improving public-school buildings. The school population of the State for the academic year 1927-28 was placed at 691,683. There were enrolled in the public schools 736,177 pupils, of whom 596,220 were in the elementary schools and 139,957 in the high schools. Expenditure for public-school education

totalled \$66,961,521.83. Yearly salaries of teachers averaged \$1857.70 (estimated).

CHARITIES AND CORRECTIONS. The central institutional control of the State in 1928 was carried on by a Department of Public Welfare, headed by Richard K. Conant, Commissioner, and by an advisory board of six members. The department had divisions for the specialized handling of matters for aid and relief, of child guardianship and of juvenile training. It administered mothers' aid, aid to persons without legal settlement, care to dependent, neglected, and delinquent children, supervision of housing and town planning, and supervised private charitable corporations and boarding homes for infants. State institutions under its care with their inmate populations of Dec. 1, 1928, were: State Infirmary, Tewksbury, 2635; Massachusetts Hospital School, Canton, 279; Lyman School for Boys, Westborough, 521; Industrial School for Girls, Lancaster, 306; Industrial School for Boys, Shirley, 302. Another administrative branch, the Department of Mental Diseases, supervised the State insane hospitals, situated at Worcester, Taunton, Northampton, Danvers, Westborough, Medfield, Palmer, and Boston; likewise, the Waltham, Wrentham, Grafton, and Belchertown State schools. The Department of Public Health had supervision of the State sanatoria at Rutland, North Reading, Lakeville, and Westfield, and of the Norfolk State Hospital.

Under the Commissioner of Correction were the State Prison at Charlestown; Massachusetts Reformatory, Concord Junction; Reformatory for Women, Framingham; Prison Camp and Hospital, West Rutland; State Farm, Bridgewater. Prisoners in the three State penal institutions on Jan. 1, 1928, numbered 1866.

LEGISLATION. The Massachusetts General Court convened January 4 and remained in session until July 25, holding the fourth longest sitting in its history. Its business was prolonged by two matters, the investigation of the affairs of the office of the State attorney-general and the effort to find a solution of the problem regarding the disposal of the Boston elevated railway. The investigation of Attorney-General Reading arose out of a charge that he had, while holding his office, secretly accepted a fee from the Decimo Club, Inc., an enterprise of a fraternal and coöperative character, of which he had earlier undertaken an investigation. It was asserted that he had worked to discourage legal proceedings against the association in New York. The State house of representatives voted Reading's impeachment June 6, whereupon he immediately presented his resignation. The proceedings were then dropped, save that later in the session, upon report that Reading intended to present himself as a candidate for governor, the House resolved that in case he should do so the Governor be requested to call a special session of the Legislature to proceed with impeachment and trial.

With regard to the Boston elevated railway a number of proposals were offered, but no provision for the disposal of the system was adopted. A bill was passed at the close of the session to provide for the construction of a subway line. This measure, known as the Governor Square Bill, authorized construction of an extension of the existing Boylston Street subway, at a cost of some \$5,000,000 to be met half by the Boston Elevated and half by the city of Boston, subject to approval by the city. Another enact-

ment provided for the building of a vehicular tunnel to East Boston. Public control of the Eastern Massachusetts Street Railway was extended. There was enacted a preferential primary bill providing blanks on the primary ballots of the April, 1928, election only, for the expression of voters' presidential preferences. A measure was passed imposing a sale tax on gasoline at the rate of 2 cents a gallon. Building laws affecting Boston were amended by an act requiring that buildings higher than 155 feet be terraced, according to rules relating to their height and volume. Salaries of various State employees were increased in the yearly aggregate of \$455,000. The law authorizing cities and towns to incur debt was amended in various respects. By resolution, the special commission investigating and revising tax laws was continued; a survey of investment trusts was provided. A measure to require the Civil Service Commission to present reasons for failure to confirm appointments by the Mayor of Boston was vetoed. The Governor vetoed also a bill to permit the sale of provisions on Sundays. A proposal for a state-wide referendum on prohibition was defeated in the House.

POLITICAL AND OTHER EVENTS. The Cape Cod Canal went into the possession of the United States Government on March 31, and tolls for passage of vessels were discontinued. A movement was started in the State to organize the celebration in 1930 of the tercentenary of the establishment of the Massachusetts Bay Colony, with a view to attracting visitors from all parts of the Country. Fire on April 15 destroyed the Back Bay station of the New York, New Haven & Hartford Railroad. Mayor Nichols of Boston appointed in April a committee of seven, including President Lowell of Harvard, to make a survey of the school system and offer recommendations as to any deficiencies found in it.

Industrial troubles at New Bedford started when, on April 9, the textile mills there declared a general reduction of 10 per cent in wages, effective April 16. A strike of about 30,000 cotton mill operatives started on the date when the cut went into effect. Work ceased in 56 mills. Efforts were made by the employers after a time to reopen some of the mills, but this was opposed both by organized picketers and by attacks on some of those who sought to return to work. The police acted to prevent mass picketing. Twenty-nine arrests were made June 30; nevertheless a concerted effort to open the mills on July 9 completely failed in the face of numerous pickets. Supported by a court decision that mass picketing was illegal, the police set out on June 30 to break it up. They encountered opposition, but no formidable resistance and made more than 250 arrests. A mob later surrounded police headquarters and made a riotous demonstration. National Guardsmen, previously ordered under arms in their armory, were called out and drove away the mob without bloodshed. Of the prisoners, six men and one woman were sentenced to six months imprisonment, several to three months, and 205 men and women to two months each.

On the night of February 2, fire destroyed a great part of the business section of Fall River. The estimated loss was \$7,000,000 or upward. The city of Springfield undertook the work of bringing a municipal water supply to the city by means of a tunnel through Cobble Mountain, conveying part of the flow of Little River.

ELECTION. The State ran counter to its record and to the tendency even in many Democratic States by giving a small plurality for Smith and Robinson, the Democratic National candidates, over Hoover and Curtis, Republican. It likewise reelected to the United States Senate David I. Walsh, Democrat, who defeated Benjamin Loring Young, Republican. The partisan proportions of the State delegation to the House of Representatives remained unchanged, at 13 Republicans and 3 Democrats, the incumbents in most cases being reelected. In the election of State officers, however, Lieutenant-Governor Frank G. Allen, Republican, received a moderate plurality over the Democratic candidate, Charles H. Cole. The election results were influenced by the high proportion of persons of Roman Catholic faith among the population, particularly in the industrial centres populated largely by French Canadian and Portuguese elements. The vote for Hoover was nevertheless greater than that for the Republican presidential candidate in 1924 or in 1920. A referendum petition was submitted on the Eighteenth Amendment in 36 of the 40 State senatorial districts. It proposed that the State senator in each case be instructed to vote for memorializing Congress for the repeal of the amendment. The vote was reported as 414,512 in favor, 283,223 against the proposal. A referendum on a law to permit public sports on Sundays likewise gave a favorable majority. The presidential vote was: Smith (Dem.), 792,758; Hoover (Rep.), 775,566.

OFFICERS. Governor, Alvan T. Fuller; Lieutenant-Governor, F. G. Allen; Secretary of the Commonwealth, Frederic W. Cook; Treasurer, W. S. Youngman; Auditor, A. B. Cook; Attorney-General, Arthur K. Reading; Commissioner of Education, Payson Smith; Commissioner of Public Welfare, Richard K. Conant.

JUDICIARY. Supreme Judicial Court: Chief Justice, Arthur Prentice Rugg; Associate Justices: Henry King Braley, John Crawford Crosby, Edward Peter Pierce, James Bernard Carroll, William C. Waite, George A. Sanderson.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY. A non-sectarian institution for technical education at Cambridge, Mass., founded in 1861. The enrollment for the autumn of 1928 was 2868, including 412 graduate and 45 unclassified students. For the summer session the registration was 1414. There were 215 members on the faculty, and 272 others on the staff of the Institute. The productive funds amounted to \$29,800,000, and the income for the year to \$3,050,000 from various sources, as follows: funds, \$1,658,000; student fees, \$897,000; miscellaneous, \$495,000. The book value of land and buildings in Boston and Cambridge was \$13,453,000. The library contained 260,000 volumes. An infirmary, two dormitories, and the Guggenheim Aeronautical Building were completed in 1928. President, Samuel Wesley Stratton, D.Eng., D.Sc., Ph.D., LL.D.

MATERNITY PROTECTION. The annual report of the U. S. Children's Bureau for the fiscal year ending June 30, 1928, indicated the following status of the maternity and infancy act: During the year 45 States and the Territory of Hawaii were cooperating with the Federal Government for the perfection of measures to safeguard the lives of mothers and children. The legislatures of the States of Connecticut, Massachusetts, and Illinois had never accepted the

provisions of the act. For 1923, 1924, 1925, 1926, 1927, and 1928 the maximum amount available for distribution among the States was \$1,190,000 yearly; the following were the amounts accepted by the States and Hawaii for the years indicated: 1923—\$716,333; 1924—\$877,122; 1925—\$932,754; 1926—\$947,959; 1927—\$977,866; 1928—\$919,075. The 1928 appropriations are not available to the States until the middle of 1929.

During the fiscal year 1928, 7341 prenatal and child-health conferences, 2002 prenatal conferences, and 18,839 child-health conferences were held in the States cooperating with the Federal Government. In addition more than a half-million home visits were made by the visiting nurses on the staffs of the administrations in charge of the service; and 150,000 expectant mothers were reached by personal contact or through correspondence. It is interesting to record that each year sees a number of counties taking on the work that had its initiation in the Federal and States programmes. At the end of the fiscal year the roll of counties doing this work was 162. In 1928, 103 combined prenatal and child-health centres, 190 child-health centres, and 17 prenatal centres were opened.

The report of the Children's Bureau recorded the assistance that had been given particular States for the meeting of their peculiar problems. For example, a Negro physician on the Bureau's staff spent a year in two Southern States assisting Negro midwives; the Bureau's consultant in obstetrics gave a graduate course in obstetrics in one State and the specialist in pediatrics did similarly in another; Bureau agents helped enroll four States into the birth-registration area of the United States. Maternity mortality studies were being carried on in the following States: Kentucky, Virginia, Michigan, Maryland, Nebraska, Minnesota, Oregon, Washington, Rhode Island, Wisconsin, Alabama, and New Hampshire. Another activity of this government bureau made possible by the Sheppard-Towner Act was the holding annually of conferences of State directors interested in maternity and infancy work. The fifth annual conference of this type was held in April, 1928. There were present the representatives from 46 States.

INFANT AND MATERNAL MORTALITY. In the year 1927, the birth-registration area saw the lowest infant mortality rate in its history. In that year 1,849,902 babies were born and 119,093 babies died, making a rate of 65 deaths per 1000 live births as compared with 73.3 for the birth-registration area in 1926. Oregon had the particularly low rate of 47.5 and Washington's rate was 49.8. It should be noted, however, that New Zealand's low rate of 39 in 1927 was a mark that the States had still to aim at.

The Bureau also reported that the maternal death rate over the period 1921-26 had moved downward. For the birth-registration area the rate was 68.2 per every 10,000 live births. In 1926, the rate of deaths was 65.6. The urban rate in 1921 was 77.1 and in 1926 it was 73.9. The rural rate in 1921 was 59.4 and in 1926 it was 56.7. It may be noted that the rates have decreased despite a tendency to scrutinize more carefully all death certificates of women of child-bearing age.

The report cited has this significant statement to make with regard to the effect of the Sheppard-Towner Act on decreasing maternal mortality:

"A comparison of maternal mortality rates for the period 1917 to 1921, exclusive of 1918 (because of the influenza epidemic), with the period 1922 to 1926 in States that were in the birth-registration area in 1917 shows a decrease in maternal mortality in every one of these States that had cooperated under the maternity and infancy act for four years or longer. A majority of the States had greater reductions in the rural areas than in the urban areas. Utah had a decrease of maternal mortality in rural areas of 35.9 per cent; Maryland, Michigan, Indiana, Washington, New York, and Minnesota had decreases of 20 to 26 per cent."

EUROPE. The French law of 1913, allowing mothers to quit their jobs for four weeks precedent to childbirth and for four weeks following without affecting the status of their contractual relations with their employers, was amended in January, 1928, to make the periods before and after childbirth 12 weeks. In Germany a new code was passed in July, 1927, which covers the status of expectant mothers under sickness insurance law. Mothers are permitted to break labor contracts, without penalty, six weeks prior to childbirth and for six weeks after the confinement. The post-natal period may be extended another six weeks on the certification of a physician. Nursing mothers may take off one hour a day during the first six months at full pay.

MATHEWS, JOSEPH McDOWELL. American surgeon, died at Los Angeles, December 2. Born at Newcastle, Ky., in May, 1847, he was graduated from the medical school of the University of Louisville in 1867. Practicing at Louisville, he became professor of surgery at the city's hospital college of medicine. Besides being president of the American Medical Association, 1898-99, he was, at one time, head of the Kentucky State Board of Health, the Mississippi Valley Medical Association, and the State Medical Society. Dr. Mathews, who received the honorary LL.D. degree from Waynesburg College, Pa., wrote several medical books, including: *Mathews on Diseases of the Rectum, Anus, and Sigmoid Flexure* (1893; 3d ed. 1903); and *How to Succeed in the Practice of Medicine* (1902).

MAUNDER, maun'dér, EDWARD WALTER. English astronomer, died at Greenwich, England, March 21. He was born at London, Apr. 12, 1851, and after attending the University College School and King's College, London, he became assistant at the Royal Observatory, Greenwich, Nov. 6, 1873, and superintendent of the solar department, where he remained until 1913, returning for three years during the World War. He was elected Fellow of the Royal Astronomical Society, in 1875, and served as a member of its council, 1885-89, and 1891-92, becoming its secretary in 1892 and vice president in 1897. During his long service in the solar and spectroscopic department he photographed the sun almost daily, in order to locate and measure the spots and faculae. He demonstrated the theory that magnetic storms are coincident with the appearance of sun spots, and the importance of his deductions ranks with previous work done on the solar surface. Maunder was largely responsible for the foundation of the British Astronomical Association in 1890 and contributed to its rapidly acquired fame, serving as its president, 1894-96. He supplemented his observations at the Greenwich Observatory with six expeditions to

view solar eclipses, going to the West Indies, 1886, Lapland, 1896, India, 1898, Algiers, 1900, Mauritius, 1901, and Labrador, 1905. Besides writing papers on the solar origin of magnetic storms, Maunder edited several astronomical publications, particularly the *Observatory* (1881-87); the *Journal and Memoirs of the British Astronomical Association*, (1892-97); and the *Astronomical Department of Knowledge* (1895-1904). He also wrote a number of books of general interest, including: *Royal Observatory, Greenwich, its History and Work; Astronomy without a Telescope* (1902); and *The Astronomy of the Bible* (1908).

MAURITANIA. A French colony in French West Africa, consisting of eight districts; having the status of a colony since Jan. 1, 1921. Area, 347,400 square miles; native population, 287,338, mostly Moorish Mohammedans; European population, about 800. The budget for 1927 was 11,725,800 francs. The colony is under a lieutenant governor, subject to the Governor General of French West Africa. See FRENCH WEST AFRICA.

MAURITIUS, ma-rish'yūs. An island possession of Great Britain in the Indian Ocean situated 500 miles east of Madagascar, and with its dependencies of Rodrigues, Diego Garcia, the St. Brandon group of six islands, and other small islands, forms a colony of the British Crown. Area of Mauritius, about 720 square miles; population, according to the census of 1921, 385,074. The estimated population at the end of 1926 was 398,236. Capital, Port Louis, with a population of 53,663 in 1926 (including suburbs). In recent years the greater part of Port Louis has passed from the hands of the Europeans to Asiatic or Chinese hands. The movement of population in 1926 was: Birth rate, 41.8 per thousand (exclusive of Indians); death-rate, 25.4 per thousand (also exclusive of Indians). Primary education is free but not compulsory. At the end of 1926 there were 57 government schools, 94 aided schools, and 3 technical schools. The average attendance in government schools in 1926 was 10,469, in aided schools, 14,202, more than three-fourths of whom were in Roman Catholic schools. In 1926 the exports were valued at £2,532,749 and the imports at £3,373,076. The staple exports are sugar, aloe fibre, and coconut oil. The principal participants in the foreign trade are the United Kingdom, the British possessions, France, and the islands of Réunion and Madagascar. The registered shipping on Jan. 1, 1927, listed 22 vessels of 5989 tons. Vessels entered in 1926, 187 of 508,555 tons; vessels cleared, 194 of 541,120 tons, the greater part of each being British. Railway mileage, 144, of which 24 miles are narrow gauge. There is cable connection with Australia, South Africa, and the islands of Madagascar, Zanzibar, and Réunion. The colony is under a governor aided by an executive council and a council of government, the latter having a minority of elected members. Governor in 1928, Sir Herbert James Read.

MAVER, WILLIAM, JR. American electrical engineer, died at Jersey City, N. J., August 8. Born at Forfar, Scotland, Oct. 12, 1851, he was taken to Canada when he was six years old, and was educated at private schools. He took part in the Fenian raid campaign, 1865-66, and he later became a fifer in the Fifth Royal Regiment of Montreal. After moving to New York, he was an electrical expert for the Western Union Tele-

graph Company from 1880 until 1884. For the next three years he was electrical engineer for the Baltimore & Ohio Telegraph Company but in 1888 he returned to the Western Union Company. He was electrical engineer for the Safety Insulated Wire & Cable Company from 1889 to 1890 and electrician for the Consolidated Telegraph and Electrical Subway Company of New York from 1889 until 1896, being also electrical engineer for the New York Heat, Light and Power Company from 1893 until 1897. Mr. Maver was often employed as an expert adviser in patent litigations. He was proprietor of the Maver Publishing Company, a fellow of the American Institute of Electrical Engineers, a member of the New York Electrical Society, an honorary member of the Association of Railway Telegraph Superintendents, and a member of the Old-Time Telegraphers' Association. Beside numerous articles on electrical subjects, Mr. Maver wrote: *The Quadruple and Other Articles on Telegraphy* (1884); *Practical Systems of Electrical Telegraphy* (1888); *American Telegraphy and Encyclopædia of the Telegraph* (1892, revised ed. 1912); *Maver's Wireless Telegraphy and Telephony* (1903, 4th ed. 1910); and *Progress in Wireless Telegraphy* (1905).

MAXWELL, JONATHAN DIXON. American inventor and automobile manufacturer, died at Chestertown, Md., March 8, at the age of sixty-three. He entered the automobile business through the medium of the bicycle, being, when he first became interested in motors, the proprietor of a small bicycle repair shop at Kokomo, Ind. His partner was Elmer Apperson. These two men, with Elwood Haynes, built the machine which is regarded as the predecessor of the modern American automobile; it is now in the Smithsonian Institution at Washington, D. C. At one time Maxwell lived at Montreal, P. Q., where he invented one of the first farm tractors driven by a motor. Later he established a factory at Tarrytown, N. Y., for the making of an automobile bearing his name. In 1905 Henry Ford visited Tarrytown in an attempt to interest Maxwell in a combination to control the field of the low-priced car. The attempt failed, but Ford and Maxwell remained close friends. For some years the latter was vice president of the United States Motors Company, and he retired from the automobile field when that company was dissolved. The remaining years of his life were passed on his farm near Chestertown, Md.

MAYOTTE (mā-yōt') AND COM'ORO ISLANDS. An archipelago belonging to France and administered by the Governor-General of Madagascar. Total area, about 790 square miles; population in 1921, 109,860; in 1925, 119,305. The area of Mayotte is 140 square miles, and the population (1925) about 12,674. Vanilla is one of the chief products; others are sugar, cacao, aloes, and perfumes. The chief imports are cotton fabrics, metals, and rice; the principal exports, hides, sugar, copra, and vanilla. The islands are in the Mozambique Channel, midway between Africa and the northern end of Madagascar.

MEAD, WILLIAM RUTHERFORD. American architect, died at Paris, June 20. He was born at Brattleboro, Vt., Aug. 20, 1846. He entered Norwich College in 1861, remaining until 1863, when he went to Amherst College, from which he was graduated in 1867. He studied architecture under Russell Sturgis in New York, after which he

spent nearly two years in foreign travel and study. He began the independent practice of architecture in 1872 in partnership with the late Charles F. McKim, in New York. Two years later W. B. Bigelow joined them, but this connection was severed in 1878; and in 1879, with the addition of the late Stanford White, the firm assumed the name of McKim, Mead & White, one of the foremost associations in the history of American architecture. The hand and influence of Mr. Mead are traceable in the works of this distinguished firm, although he never assumed supreme control of any of them. Among the monuments to their skill are the Boston Public Library; the library and other buildings of Columbia University, New York; the Morgan Library, New York; the Agricultural Building at the World's Columbian Exposition, Chicago, 1893; the great scheme for the improvement of Washington, D. C. (in conjunction with D. H. Burnham and F. L. Olmsted, Jr.); the Pennsylvania Railroad station, New York; the old Madison Square Garden (now demolished) and the Washington Arch, New York; the Century, Metropolitan, University, and other clubs, New York, and the Library and Hall of Fame of New York University. The firm also designed the War College building, Washington, D. C.; the New York Postoffice building, and many other notable structures, and planned the alterations in the White House, the executive mansion at Washington. Mr. Mead retired from practice in 1920. He was considered one of the greatest classicists ever to practice in America, with especial skill in and love for the Italian Renaissance. In 1922 he was made a knight commander of the Order of the Crown of Italy, in recognition of his work in introducing Roman and Italian Renaissance architectural styles in America. He was a fellow of the American Institute of Architects, a member of the American Academy of Arts and Letters and president of the American Academy in Rome. In 1902 he received the degree of LL.D. from Amherst College; he was elected to the National Academy of Design in 1910, and he received the gold medal of honor of the National Institute of Arts and Letters.

MEASLES. A brief summary of the status of progress in the knowledge of this affection is given by H. Deicher in an article on the movement of epidemic diseases (*Deutsche medizinische Wochenschrift*, Nov. 9). Efforts to reveal the exciting cause have of late receded into the background. It has been shown of late that either the serum of convalescents from measles, or, this failing, any adult blood serum, has preventive qualities; but since these announcements, progress seems to be at a standstill. To narrate the alleged but unsubstantiated claims may be mentioned the cocci believed by Caronia to be the exciter of the disease, the cell inclusions of Lipschutz (found only in apes infected with human measles), anerobic organisms cultivated from measles blood, green streptococci found by American authors, etc., etc. Degkwitz alleged that he could cultivate measles virus outside the body although without any success at isolation. In another direction it has been found that measles, like quite a few infectious diseases (including vaccinia) can sometimes be followed by encephalitis. The author himself had seen a case, and in general the ability of measles to cause serious nervous complications must now be recognized. He believes firmly that these complications will

subside shortly, that they are transitory and not an appanage of the disease.

MEAT. See LIVESTOCK.

MECHANICAL ENGINEERS, AMERICAN SOCIETY OF. An organization founded in 1880 and incorporated in 1881 under the laws of the State of New York, with the following objects: To promote the arts and sciences, to encourage original research, to foster engineering education, to advance the standards of engineering, to promote the intercourse of engineers among themselves and with allied technologists, and, in coöperation with other engineering societies, to broaden the usefulness of the engineering profession. Considerable progress was made in standardization of mechanical engineering during the year, 25 projects being sponsored by the Society under the direction of various committees, many of which completed standards and safety codes. Two new projects for which the Society accepted sole or joint sponsorship in 1927-28 were: Speeds of driven machines, and screw threads for small hose couplings; and 154 committees were at work on the standards projects sponsored by the Society which involved the work of 657 committee-men, of whom 296 were members of the Society. Research committees numbering 24, with a personnel of 315 members, were at work on researches on projects in engineering and industry. Over 400 meetings were held during the year throughout the country in the various geographical groups, in addition to the annual and spring meetings and regional meetings. There were 69 local sections and 10 professional divisions, caring for the different phases of mechanical engineering.

The publications of the society included: *Mechanical Engineering*, the journal; *Transactions*, containing the year's papers of specialized interest and issued quarterly on the basis of registration in the professional divisions; the *Record and Index* of all papers presented at authorized meetings, committee proceedings, the presidential address, etc.; *The Engineering Index* to the technical press of the world; *Condensed Catalogues of Mechanical Equipment*; the *A. S. M. E. News*, the semi-monthly newspaper; and the *Membership List* of the Society. The 1928 meeting was held at the headquarters in New York on December 3-7. In November, 1928, the membership was 19,085. Officers for 1928-29 were: President, Elmer A. Sperry; vice presidents, John H. Lawrence, E. A. Muller, Newell Sanders, Paul Wright, Robert L. Daugherty, William Elmer, and Charles E. Gorton; past presidents, Fred R. Low, W. F. Durand, W. L. Abbott, C. M. Schwab, and Alex Dow; managers, Paul Doty, Ralph E. Flanders, Conrad N. Lauer, Frederick H. Dorner, William A. Hanley, Luther B. McMillan, Charles M. Allen, Robert M. Gates, and Ely C. Hutchinson. Headquarters are located in the Engineering Societies Building, 29 West 39th Street, New York.

MEDALS. See CHEMISTRY, INDUSTRIAL.

MEDIEVAL LANGUAGE AND LITERATURE. See PHILOLOGY, MODERN.

MEDICAL ASSOCIATION, AMERICAN. A union of the constituent, or State and Territorial, medical associations, founded in 1847, "to promote the science and art of medicine and the betterment of public health." The legislative powers of the association are vested in a House of Delegates which is empowered to transact all business not provided for in the by-laws and

elects the general officers, and the board of nine trustees. Members of the association must be members of constituent associations, and these members in good standing constitute the Scientific Assembly of the American Medical Association, which meets annually to present and discuss subjects pertaining to the science and art of medicine. This assembly is divided into 16 sections, each having its own officers who serve for a year. Some of the sections are practice and medicine; survey, general and abdominal; preventive and industrial medicine and public health; radiology; nervous and mental diseases; pathology and physiology; and disease of children. The annual convention in 1928 met in Minneapolis, Minn., on June 11, with an attendance of about 6000. At this meeting eight scientific sections were in session and leading authorities and investigators in the field of medical science announced and discussed the latest discoveries and methods in treating the sick. The scientific exhibit, an outstanding feature of the convention and the largest of its kind ever assembled, in charge of Dr. V. C. Myers, professor of biochemistry at Western Reserve University, Cleveland, Ohio, showed the laboratory methods used by physicians in diagnosis. An exhibit on diseases of children showed studies on vitamins and milk as applied to infant feeding; and plastic surgery was illustrated with models, photographs, and artificial parts from civil and military practice. The membership of the association in 1928 totaled 96,490. The annual convention for 1929 was scheduled for Portland, Oregon, July 8 to 12. Officers for 1928-29 were: President, William S. Thayer, Baltimore; president-elect, Malcolm L. Harris, Chicago; vice president, W. A. Jones, Minneapolis, Minn.; secretary and general manager, Olin West, Chicago; treasurer, Austin A. Hayden, Chicago; and editor, Morris Fishbein, Chicago. The official publication is the *Journal of the American Medical Association*. The headquarters of the Association are at 535 North Dearborn Street, Chicago, Ill.

MEDICAL CENTRE. See ARCHITECTURE.

MEDICAL PROGRESS. In accordance with the usual plan of the YEAR BOOK, articles in this field refer in the first place to the great social maladies which destroy, cripple, or incapacitate large numbers of people and call for concerted private and government efforts to abate them. These are naturally subdivided into acute transmissible epidemic diseases such as BUBONIC PLAGUE, SMALL POX, YELLOW FEVER, TYPHOID FEVER, DENGUE, INFLUENZA, etc., etc; severe endemic acute diseases such as PNEUMONIA, and ACUTE RHEUMATISM; such chronic infections as SYPHILIS, TUBERCULOSIS, MALARIA, LEPROSY, etc. and diathetic or nutritional affections such as DIABETES, CANCER, GOITER, PELLAGRA, RICKETS, and the like. All such affections count their victims by thousands. Other diseases are of interest because they are comparatively new and unknown or because of unusual death rate. Of new diseases there are in addition to ENCEPHALITIS or sleeping sickness, TULAREMIA and MALTA FEVER. Chronic affections localized in special organs comprise ANÆMIA, HEART DISEASE, GALLSTONE DISEASE, INSANITY, EPILEPSY, AND MENTAL DEFECT, all of large incidence. In addition there are scattering articles which cannot be brought under any special rubric and which vary from year to year. Here belong such startling innovations as INSULIN and VITAMINS.

MENINGITIS. Epidemic or cerebrospinal meningitis is known to be particularly deadly to nurslings and very young children in general, the mortality reaching 80 to 90 per cent, and none of the remedies which appear able to modify the disease in older subjects proved of any value in this group. Even the apparent success in the older groups may be attributed, in part at least, to a relatively milder type of infection prevalent in more recent years. Dr. Mader of Frankfurt am Main, has obtained, however, a perfect outcome in a series of five children with ages varying from six months to four years and this result is attributable solely to a chance infection with measles. In this series death was imminent not only from the acute symptoms of the early stage of the disease, but also from the chronic stage which followed this period. The first child was not attacked by measles until the 13th week of the disease, and the second on the 47th day; but, in the remaining three, measles supervened on the 10th, 11th, and 13th days. In both types of case the intercurrent action of the measles infection prevailed over the original disease and the children all made good recoveries. Just at present it is impossible to explain the *modus operandi* of these cures, but the author was inclined to attribute the good result to the extensive eruption of the measles (see *Deutsche medizinische Wochenschrift*, Nov. 9, 1928).

MENTAL DEFECTIVES. In May, Dr. W. Timme of New York announced before the American Association for the Study of the Feeble-minded that he had secured remarkable improvement in the special type of mentally defective known as Mongolism through feeding the patients on pituitary substance, especially the anterior lobe in combination with hypodermic injections of extracts of the same and ordinary thyroid feeding. After ten years' experience in this field, he had brought these subjects to such a level of mental efficiency that they could no longer be spoken of as idiots. One patient attained a normal intellectual quotient, while some who originally were idiots unable to dress themselves, eat properly or converse learned arithmetic up to multiplication with three or more figures and long division; to write letters and even to do oral arithmetic. It must not be understood that all of these subjects are susceptible to such improvement, for some have not responded to the treatment. But when it is considered that textbooks uniformly speak of these cases as hopeless the significance of Dr. Timme's report can be appreciated.

MENTAL TESTS. See PSYCHOLOGY.

MERCURY. See QUICKSILVER.

MERCURY BOILERS. See BOILERS.

MERCURY VAPOR RECTIFIERS. See DYNAMO-ELECTRIC MACHINERY.

MEREDITH, EDWIN THOMAS. American editor, publisher, and public official, died at Des Moines, Iowa, June 17. He was born at Avoca, Iowa, Dec. 23, 1876. He was educated at Highland Park College, Des Moines. His father was a successful farmer and also publisher of a weekly agricultural paper called *The Farmers' Tribune*. The younger Meredith, after leaving college, conducted the paper with much success until 1902; then he transformed it into a monthly, *Successful Farming*, which attained a very large circulation. He interested himself also in banking, becoming a director of the Iowa Trust and Savings Bank and the Chicago Federal Reserve Bank, and in politics. He was the unsuccessful

Democratic candidate for United States Senator in 1914 and for Governor of Iowa in 1916. He was appointed a member of the board of excess profits advisers by Secretary McAdoo in 1917, and a member of the Industrial Conference by President Wilson in 1919. From January, 1920, to March 4, 1921, he was Secretary of Agriculture in the cabinet of President Wilson. He was considered as a possible Democratic candidate for President in 1924 and 1928. Mr. Meredith was a member of the Advertising Club of America, of which he had been president, and was also a director of the Chamber of Commerce of the United States.

MERRILL, WILLIAM BRADFORD. American journalist and newspaper manager, died at New York, November 26. He was born at Salisbury, N. H., Feb. 27, 1861, and attended the Boston Latin School, 1874-76, continuing his studies in Paris, 1876-78. On his return to the United States he took a position, in 1879, as a reporter of *The Philadelphia North American*. He transferred to *The Philadelphia Press*, as staff correspondent in the same year, subsequently becoming telegraph editor, 1880, dramatic and Sunday editor, 1881, and managing editor, 1886. His success was such that in 1891 he was made managing editor of *The New York Press*. He accepted an offer of a similar place on *The World* in 1896, later serving as business manager, 1901-07. William Randolph Hearst made him manager of the *New York American* in 1908, and in 1917 placed him at the head of all the Hearst papers. Mr. Merrill was forced by ill health to resign in 1927. He wrote, *Guide to Railways of the United States* (1881).

MESOPOTAMIA, IRAK or IRAQ. A territory under British mandate in Asia. It comprises the region on the Tigris and Euphrates rivers between Persia and Northern Arabia; formerly consisting of the vilayets of Bagdad, Basra, and Mosul in the Turkish Empire; conquered by British and Indian troops during the World War and recognized afterward as an independent state to be placed under a mandatory power, in this case Great Britain. On Dec. 14, 1927, a treaty was signed between Great Britain and Irak (ratified in 1928), by which the former undertook to recognize the latter as an independent State.

AREA AND POPULATION. The area is given at 143,250 square miles; population, according to the census of 1920, 2,849,282, distributed as follows among the respective divisions: Bagdad, 1,360,304; Basra, 785,000; Mosul, 703,378. The inhabitants are mainly Mohammedan and are divided among the two Mohammedan sects as follows: Shiites, 1,494,015; Sunnites, 1,146,685. The Jews in 1920 numbered 87,488 and the Christians, 78,792. The chief seaport is Basra on the Persian Gulf.

EDUCATION. In 1926 there were 22,607 pupils in 247 government schools, with 877 teachers, and (1925) 12,900 pupils in 45 private schools. There are secondary schools at Bagdad and Mosul with 577 pupils, and six intermediate schools at other places with 87 pupils. The education budget for the year 1926-27 amounted to 2,524,000 rupees.

PRODUCTION. The soil of the country is rich, but there are vast areas which can only be cultivated if irrigated. The natural oil resources have not as yet been fully investigated, but rich deposits are believed to exist. The growth of cotton is be-

ing stimulated, and 3000 bales were brought to the ginneries in 1926. Other crops cultivated are wheat, barley, oats, linseed, and flax. The date crop is important.

COMMERCE. No later figures for commerce were available than those for 1925-26 when exports totaled 50,293,783 rupees and imports 107,040,626 rupees. Mesopotamia's chief commercial importance is as a medium for transit trade to and from Persia.

FINANCE. The estimated revenue in 1926-27 was 55,171,900 rupees and the estimated expenditure, 54,962,620 rupees.

COMMUNICATIONS. The total route mileage of railways open on Mar. 31, 1926, was 811 miles. There were also 194 miles of siding, making a total of 1005 miles. Railway earnings in the year 1925-26 were 9,499,995 rupees and expenses 8,920,974 rupees.

GOVERNMENT. The organic law passed by the constituent assembly in June, 1924, provides for a limited monarchy and a responsible government. The legislative body consists of a senate of 20 nominated "elder Statesmen," and the lower house of 88 elected deputies. King in 1928, Faisal; Premier and Minister of Foreign Affairs, Abdul Mohsen Es Saadun (appointed in January, 1928).

HISTORY. Early in the year the parliament was dissolved and new elections ordered to attempt to get a workable majority for the new Prime Minister, Abdul Moshen Es Saadun, who succeeded Jafar Pasha. Jafar Pasha resigned because he was unable to get his conscript army bill through and also because of dissatisfaction with the financial situation. The elections in May returned 70 of the 88 candidates who promised to support the Government. No other items of interest were reported in the press during the year.

METABOLISM STUDIES. See FOOD AND NUTRITION.

METALLURGY. Improvements in the metallurgy of zinc were a feature of the year 1928, a considerable advance being made both in the retorting process, already long established, and in the electrolytic process, of more recent development. Copper metallurgy proceeded along familiar lines, with most of the reduction plants operating at capacity toward the end of the year. Lead smelters were giving increased attention to sintering, and the Harris process of refining had had intensive development. The gold and silver plants reported little that was new in the way of technology, though several new plants and extensions had been made. In ore dressing, more attention was paid to crushing machinery and to proper sizing of particles. The flotation process of concentration continues to dominate the field, with increased application to ores of every character, and to refinements for the purpose of securing higher recoveries and more nearly automatic control.

ORE DRESSING. The Symons cone crusher continued to displace other machines for crushing ore between 10 inches and $\frac{1}{2}$ inch, a field in which rolls were formerly generally accepted, though disk crushers also found favor. The large capacity of the cone crusher and its wide range of size between feed and product, make it a superior machine. Furthermore, it is generally considered to give a smaller proportion of unduly fine material than most other machines that have been used for the purpose. Jaw or gyratory

crushers continued to be used for primary breakers, preferably with heavy duty manganese steel-apron feeders where direct feeding from the bins is not possible. An excellent example of such practice was to be seen at the New Cornelia mill at Ajo., where an 8-foot conveyor, 72 feet long, operating at a speed of 9- to 10-feet per minute, handled 900 tons an hour, feeding a 54-inch gyratory crusher for reducing the ore to 6 inches.

Ball mills had been pretty well standardized, though each year sees a few new ideas emanate from the Patent Office. Compartment mills had been designed, in which fairly coarse grinding is done in one end of the mill, the product then passing a grate to the other end where conditions are such as to promote fine grinding. Such mills had been put on the market but had not been generally accepted. Special forms of liners also were devised, such as were used in the Williamson ball mill, and the Straub rib-cone mill, which, in trial installations, had given favorable results. The Williamson installation at the Inspiration concentrator, in Arizona, gave a ball consumption of 1.2 pounds of balls per ton of ore ground, and a power consumption of $7\frac{1}{4}$ kilowatt-hours per ton, both lower than standard practice.

Marked attention was being paid to short-circuiting material that was already ground sufficiently fine, so that the entire mill tonnage does not pass through every crushing or grinding machine. The Hayden, Ariz., concentrator of the Nevada Consolidated Company had been a leader in this investigation; there, it was a maxim that no fine crushing should be done in the coarse-crushing department, and no coarse grinding in the fine-crushing department. The Salt Lake City station of the U. S. Bureau of Mines, had recently done a great deal of laboratory experimentation in this same field, the results having been published, in part. The truth of the Rittinger theory of the ratio of work required in particle reduction had been confirmed. It was found that the work required to grind ore from 100 to 200 mesh was greater than that required to break it in the mine and crush and grind it down to 100 mesh, so it was evident that steps should be taken to avoid excessively fine grinding wherever possible. Some ores have their valuable minerals so intimately associated that the finest grinding is necessary, but even when this condition obtains it is often possible to concentrate the valuable minerals in a fairly coarse condition, and then to grind the concentrate before making the final separation by selective flotation or other means.

Proper screening and classifying equipment is, of course, necessary for close control with these ends in view. Many excellent vibrating screens were being offered, displacing trommels used for finer sizing. For wet sizing, the ordinary forms of drag classifiers were quite widely supplemented by apparatus of the bowl type, especially where a considerable percentage sufficiently fine for flotation could be extracted from a roll- or cone-crusher product. The bowl classifier was particularly well suited to the separation of coarse sand and primary slime. No advantage is gained, however, by using the bowl type for secondary classification in closed circuit with ball mills.

Jigs and tables were not in general use in modern concentration plants, straight flotation being the process generally employed except where there was a marked difference in specific gravity, where there is no great loss in slimed products,

or where oxidized ores are treated, as cassiterite.

Even for tin ore, however, flotation was applied indirectly in Bolivia, for floating the impurity, pyrite, and thus improving the grade of the cassiterite concentrate. The U. S. Bureau of Mines was also doing some investigational work in the floating of some non-metallics, such as limestone, flourspar, and phosphate. Lead oxides were being successfully floated at the Warren, Ariz., mill of the Phelps Dodge Corporation, though but little publicity had been given to the work. Over 90 per cent of the lead is recovered on some oxidized ores, which are previously sulphidized by treatment with a solution of sodium sulphide.

Various forms of potassium or sodium xanthate continued to be the favorite reagents for selective flotation, generally used in connection with pine oil, in a circuit made alkaline with lime. The alkalinity is closely adjusted and controlled. Several flotation machines were popular, the Fahrenwald being one of the newer mechanically agitated types that had had an important application during the last year on the amygdaloid native-copper ores of Michigan, heretofore thought not to be amenable to flotation. In the Southwest, the jet, or free-air type of machine, as exemplified by the Forrester, Hunt, and Southwestern Engineering machines, had proved popular, for they were cheap in first cost as well as in operation, using very low pressure air, and their metallurgical efficiency seemed to be satisfactory, though generally no better than the older machines.

Flotation litigation was not so active, though differences between the three interests just mentioned may have to be settled in the courts. The most important of the Minerals Separation patents have now expired. Minerals Separations' soluble frothing agent patent was upheld in the suit against Magma, by the Federal District Court in Maine, but the decision was reversed in the middle of January, 1929, by the Court of Appeals. The Metals Recovery suit against Anaconda, for the use of xanthate, went against the appellant.

HYDROMETALLURGY. New construction and expansions of old facilities for the production of electrolytic zinc in North America was a feature of 1928. The Consolidated plant at Trail, B. C., was being enlarged to an expected capacity of 375 tons daily in 1929; the Anaconda plant at Great Falls, Mont., turned out about 335 tons a day, and the new plant at Anaconda, completed in 1928 at a cost of about \$2,000,000, had a capacity of 165 tons; the Sullivan plant, completed in 1928, would produce 50 tons daily, and was to be enlarged to twice or thrice that; and the Evans-Wallower plant, at St. Louis, which was to be completed in 1929, was to be of 50 tons' capacity. The Sullivan and Evans-Wallower plants followed the designs of U. C. Tainton; in his process, the return electrolyte used for leaching carries 28 to 30 per cent of free sulphuric acid, and the electrolysis is carried out at a current density of 100 amperes per square foot, each of these amounts being about three times as great as in ordinary electrolytic zinc practice. Ordinary commercial aluminum sheet is used for the cathodes. An unusual feature of the product is its high purity, average assays being slightly above 99.99 per cent zinc, whereas other grades of electrolytic zinc are between 99.90 and 99.95 per cent. Though this may seem a small differ-

ence, the purer product seems much more adaptable to fine rolling and die-casting work, and to certain stamping processes, so that an effort has been made to obtain a higher price for it. The increased purity is obtained by using a special anode, composed of 99 per cent lead and 1 per cent of other material, instead of a pure lead anode. This prevents disintegration of the anode by lowering the discharge potential of oxygen at a lead peroxide surface.

In copper leaching, more attention was being given to particle size, and with some ores it seemed likely that separate treatment, by percolation, of the sand and slime might be advisable. On others, all fine grinding, with subsequent agitation to dissolve the copper, might be found desirable. Careful sampling and testing are necessary before deciding on the proper method to adopt.

A new heap leaching and cementation operation of the Utah Copper Company began in March, 1928. Natural surface water is used as the lixiviant, percolating through dumps containing sulphide ore varying from 0.3 to 1 per cent of copper. Detinned iron scrap is used for precipitation, about $1\frac{1}{4}$ pounds being required for each pound of cement copper produced. About 97½ per cent of the copper in solution is thus recovered, in a product averaging about 87 per cent copper. The process makes a very successful method of treating the waste dumps that have been accumulating at various points in Bingham Canyon for years. The Phelps Dodge Corporation also had been adding to its heap-leaching operations at Warren, Ariz. and the Inspiration Company, further north in the same State, had carried on experimental work of the same nature.

Another important vat-leaching plant went into operation during 1928, that of the Andes Copper Company, at Potrerillos, Chile, the practice closely following that developed at Ajo and Inspiration. The copper-bearing solution was treated with a little limestone before being sent to the cell-house, with the object of precipitating ferric iron and arsenic, the precipitate being subsequently removed by a battery of Moore filters with a loss of only one-half of one per cent of copper in the filter cake. Some percolation troubles developed owing to the presence of amorphous fine material in the ore. The leaching process in use at the Bwana M'Kubwa property in Africa, in which ammonia is used, had not been an unqualified success, but the metallurgical problem there is expected to be solved satisfactorily in time.

A new copper refinery was under construction at El Paso, to have a capacity of 100,000 tons a year. This was to be operated by the Nichols Copper Company, and would treat the copper produced in the Southwest by the Phelps Dodge, Calumet & Arizona, and New Cornelia companies. It was expected to be in operation by 1930. The multiple process was to be used rather than the series process which had been successful at the Nichols refinery at Laurel Hill, Long Island, N. Y.

In the treatment of gold and silver ores, progress largely was confined to the construction of new plants following well recognized methods of treatment by the cyanide process. Two new plants were built in eastern Canada—the 350-ton Coni-anrum mill in the Porcupine district of Ontario, and the 100-ton Siscoe plant at Amos, P. Q. The recognized Canadian practice was followed, of grinding in cyanide solution in two stages, thick-

ening of the resultant pulp, agitation, decantation, and filtration of the residue in continuous filters. The Merrill-Crowe precipitation process for clarified pregnant solution was in general use at most or all of the newer plants.

The attempt of the Porcupine Paymaster, in Ontario, to mine gold ore assaying between \$2.50 and \$3 a ton, concentrating it and cyaniding the concentrate had not been successful. The first 500-ton unit of the three-unit plant was started in the spring of 1928, but a change in management occurred, and it was understood that an attempt will be made to mine higher-grade ore. At the end of the year the concentrator was not in operation.

The United Eastern Company was treating accumulated tailings at some of the older Mexican plants where the patio process was originally used, and the Lucky Tiger-Combination Company had been rather successful in adapting the Caron-Clevenger process to a refractory ore at the El Favor mine, about 75 miles from Guadalajara. In Africa, the 1000-ton mill of Ariston Gold began operations in 1928.

The Achotla unit of the American Metal Company, in Mexico, was successfully using salt roasting of an argento-jarosite ore, preliminary to cyanide treatment, all other methods of treating that ore having been failures. Roasting was done in Holt-Dern furnaces, the calcine then being washed with water and acids to remove base metals and cyanicides, after which the residue is cyanided.

PYROMETALLURGY. Little new had occurred in copper smelting, the usual procedure being to roast in multiple-hearth furnaces for the purpose of removing excess sulphur, drying the charge, and affording hot material for the succeeding operation; smelting the roasted concentrate in reverberatory furnaces fired with either oil or powdered coal depending upon which is the cheaper on a heat-unit basis; and converting the 30 to 40 per cent matte thereby produced, in basic-lined converters, preferably in large units such as are provided by the 13 x 30-foot Peirce-Smith type.

Some of the smelters were omitting the roasting step, owing to the fact that selective flotation had provided a high-grade concentrate that does not require sulphur elimination. Such, for example, were the Cananea and International smelters. However, more fuel was required for smelting and the furnace had less capacity; also it was troublesome to feed wet material. On the other hand, there was no expense for roasting and no trouble from magnetite in the furnace. The Carson side-feeding patents had been upheld in a suit against Anaconda decided by the Court of Appeals on May 28, the U. S. Supreme Court denying a review of the case on October 22. The Federal District Court, at Tucson, Ariz., decided, on November 19, that the Calumet & Arizona and Phelps Dodge smelters also were infringers. The American Smelting & Refining Company has submitted an accounting for past infringements, as directed by the courts. Reverberatory practice was divided between side and centre feeding, with excellent metallurgical results secured by either method. An important smelter addition was under construction at Copper Cliff, Ontario, by the International Nickel Company.

Lead smelters were receiving high-grade lead concentrates low in active slag-forming material but relatively high in zinc. For such material,

double sintering was generally practiced, the product from the primary sintering machines being finely crushed. Improvements have been made in these sintering machines, the width being increased to 63-inches, giving them a capacity as high as 350-tons a day. Blast-furnace capacity at most smelters was more than adequate, with the high-grade material received. Practice in this department showed little change, sintering being the most important branch of lead smelting nowadays. Blast-furnace gases are usually diverted through a bag house to precipitate the fume, and roaster gases to a Cottrell electrolytic precipitator. Practice is divided for sinter gases.

In the Parkes process of refining, the capacity of softeners was increased, and liquation of crust from the desilverizing kettles was practiced at Kellogg, Idaho. Several refineries had adopted the Betterton dezincing process whereby the zinc is removed by chlorine gas in the form of zinc chloride, with disposal or regeneration of the by-products to advantage. Further improvements were made in the Harris process, and a new plant of 12,000 tons monthly capacity, using this process, was nearing completion at Monterey, Mexico.

Most of the American zinc-retorting plants were being modernized by the installation of improved means for drying the concentrate received, substituting multiple-hearth roasting furnaces for the old Hegelers, installing sintering machines of the Dwight & Lloyd type for nodulizing the fine material, and providing Cottrell precipitators, or other means, for catching the fume. The Waelz process was of increased importance as a means of burning zinc out of low-grade ores and residues.

Continuously operated vertical retorts were developed to a commercial success by the New Jersey Zinc Company at its Palmerton, Pa., plant. The capacity of these retorts is much greater than those of the ordinary form. The charge is customarily in the form of briquettes.

METEOROLOGY. Complete daily weather maps of the entire northern hemisphere for the first four months of 1925, prepared by C. L. Mitchell, of the U. S. Weather Bureau, from all available data for that period, including the meteorological observations taken by Sverdrup on the S. S. *Maude* off the Siberian coast, have shown that during the colder months the principal region for the development of cyclones is apparently to the southwest of Japan, mainly over the China Sea, while among the principal regions of dissipation is western Siberia. Outbursts of polar air from the Arctic, leading to anticyclones, often of very great magnitude, are most frequent southeastward over the Mackenzie Basin, and in the vicinity of Nova Zembla. A study of the progress of cyclones and anticyclones as shown on these maps has led to an improved system of making weather forecasts for the United States a week in advance.

It has long been known that in the free atmosphere the motion of air in the majority of cases approximates quite closely to the steady state characterized by the so-called "geostrophic" wind. Brunt and Douglas have shown, however, that when the distribution of pressure is changing, there is present, in addition to the geostrophic wind blowing along the isobars, a component flowing from rising, towards fall, pressure, and that under some conditions the effects of this

latter component are quite important. The tendency to rain in regions of maximum pressure fall, and to fine weather in regions of maximum rise, for example, may be attributed to the vertical motions accompanying the convergence and the divergence, respectively, of this additional component of the wind.

METEOROLOGICAL PHYSICS. The aurora still presents a number of interesting problems, the solution of which may shed a great deal of light on conditions existing in the high atmosphere. In the ordinary polar aurora, the gases of the upper air are caused to emit the characteristic auroral radiations through the energy supplied by the impact of electrons coming from the sun. The so-called "negative" bands of nitrogen, due to ionized nitrogen molecules, so prominent in the auroral spectrum, require for their excitation an amount of energy equivalent to that possessed by electrons which have fallen through a potential difference of twenty volts; the "positive" bands, due to the normal nitrogen molecule, faintly present in the aurora, require less energy, but the line spectrum, totally absent, requires considerably more. Hence the electrons which excite the auroral radiation must strike the upper atmosphere with about twenty volts energy.

The famous green line, on the other hand, is emitted during a transition of the dissociated oxygen atom between the two "metastable" states. As Campbell, Rayleigh, Slipher, and others have shown, the whole night sky is always glowing faintly with this green light; the green glow of the night sky probably is not due to electrons from the sun, and it has been suggested that ultra-violet solar radiation is responsible—molecular oxygen is dissociated into atoms, transformed to ozone, and then turned back to molecular oxygen again under the action of short wave lengths. A red line in the auroral spectrum photographed at the Lowell Observatory on July 7, 1928, is considered by Kaplan to be a positive nitrogen band.

TORNADOES AND HURRICANES IN 1928. Tornadoes, windstorms, and hail caused \$4,000,000 property damage, and the loss of thirteen lives, in Wisconsin, Minnesota, and Iowa during August. Twenty-five people were killed, one hundred injured, and \$2,500,000 damage wrought by tornadoes in Iowa, Illinois, Nebraska, and South Dakota in September.

Great loss of life, damage to property, and destruction of crops were caused by hurricanes in the West Indies and United States during the year. Two of these tropical storms swept in from the West Indies over Florida, Georgia, and South Carolina in August, accompanied by high winds and torrential rains. In September, one of the greatest hurricanes on record appeared; the force of this storm, the most destructive since the Galveston hurricane of 1900, was felt during September 10 to 20, over Martinique and Guadeloupe, the Virgin Islands, Porto Rico, the southern Bahamas, central Florida, and northward up the Atlantic coast to New Jersey and beyond, before it finally merged with an extra-tropical cyclone. The loss of life exceeded 3000, of which nearly 2000 occurred in Florida, principally on account of the flood caused in Lake Okeechobee; \$50,000,000 damage was done in Porto Rico, \$25,000,000 in Florida, and many millions over the rest of the path. The wind reached 160 miles an hour at San Juan and at Lake Okeechobee, and was probably 200

miles an hour close to the centre; the barometer reading at West Palm Beach, 27.43 inches, was the lowest sea-level pressure ever recorded in the United States during a hurricane; and the heaviest rainfall on record occurred in Porto Rico.

NECROLOGY. Charles Chree, authority on atmospheric electricity, terrestrial magnetism, and allied subjects, August 12; Finn Malmgren, lost on the *Italia* polar expedition. See biographical sketches.

BIBLIOGRAPHY. The important works of the year in Meteorology included: Sir Napier Shaw, *Manual of Meteorology*, vol. ii (Cambridge, England); A. Angot, *Traité élémentaire de météorologie*, 4th ed. Paris; D. Brunt, *Meteorology* (London); W. J. Humphreys, *Physics of the Air*, 2d ed. (New York); R. Duncan, *Air Navigation and Meteorology* (New York); C. E. P. Brooks and J. Glasspoole, *British Floods and Droughts* (London); V. F. Hess, *Electrical Conductivity of the Atmosphere* (London); W. Grosse, *Wetterkunde* (Berlin).

METEORS. See ASTRONOMY.

METHODIST CONNECTION OF AMERICA, WESLEYAN. A branch of the Methodist Episcopal Church, organized May 31, 1843, at Utica, N. Y.; the outgrowth of controversy over what was termed "liberty of testimony and freedom of discussion," and also a protest against the exercise of ecclesiastical authority. The purpose of the new organization was a church that should be anti-slavery and non-episcopal. In doctrine, the church is in accord with the Methodist bodies generally. In 1928 the branch comprised 23 annual Conferences, including a mission Conference in India and Africa. Its General Conference meets quadrennially and convened in June, 1927, at which time the use of tobacco in any form, its growth, sale, or manufacture, was made a test of full membership. Statistics for 1928 gave 666 ministers; 21,000 members; 675 churches; 521 Sunday schools; 3442 Sunday-school teachers and officers; and 30,124 scholars. Among the colleges maintained by the church were: Central College, Central, S. C.; Houghton College, Houghton, N. Y.; Marion College, Marion, Ind.; and Miltonvale College, Miltonvale, Kans. *The Wesleyan Methodist* (weekly), Syracuse, N. Y., is the official organ of the church. A large printing plant is maintained at Syracuse and all the literature of the church is printed there. Headquarters are at 330 East Onondaga Street, Syracuse, N. Y.

METHODIST EPISCOPAL CHURCH. Methodism in its widest signification and intention was a "revival of Christian earnestness, simplicity and power." John Wesley (1703-91) had no intention of establishing a new church. His effort was to revive pure and undefiled religion. He taught the doctrines of the Church of England, and "faithfully urged the people to attend its ordinances, to be present at its public assemblies, and be interested in its prosperity." Had the authorities of the Church of England accepted some of Wesley's plans in place of driving him away from them, things might have worked out differently. He sent two of his workers to America in 1769, Richard Boardman and Joseph Pilmoor. These men were followed in 1771 by a man who was destined to be the great leader of the infant church, Francis Asbury. The first Conference was held in Philadelphia in 1773 at which were present 10 preachers, who reported

1170 members. The work grew until 1784, at which time there was organized in Baltimore, at the "Christmas Conference," the Methodist Episcopal Church.

The governing body is the General Conference that meets once in four years, composed of an equal number of ministerial and lay delegates. They make all the rules and regulations. The Annual Conference meets once a year, presided over by a bishop, when all pastoral changes are considered and reports of the local churches gathered and compiled. There is a church conference called the Quarterly Conference, that administers all the matters that pertain to the work of the local church. There were in the United States in 1928, a total of 160 annual conferences and missions.

The quadrennial session of the General Conference which convened at Kansas City, Mo., in May, 1928, was attended by a forward-looking body of more than 800 delegates, and was a most successful meeting. Among the important steps taken by the Conference was its action in conferring upon Central Conferences in foreign fields the right to elect their own bishops from their own territory, presumably natives who had become Christians. Another step indicative of the progressive spirit of the Conference was its resolution urging an organic union with the Methodist Episcopal Church, South, the Presbyterian, and the Congregational churches. Although union was not effected between the Southern and Northern branches of the Church, close relations exist between these two bodies and formal union was forecast for a not very distant date.

The organization of the World Service (the benevolence programme of the Church) was somewhat simplified in its management and at the close of its fiscal year, ending October 31, it reported a remarkably successful year, having raised approximately \$2,000,000 in the last day or two of the year, a notable achievement not attained since the close of the Centenary campaign.

The Methodists have long had missions that have grown into Annual Conferences, in Mexico, South America, Europe, Africa, southern and eastern Asia, the Philippines, and the islands of many seas. This work is carried on by the Board of Foreign Missions. They received during 1928 a total of \$3,927,000. The Board of Home Missions and Church Extension looked after weak churches in new and growing communities in the United States, where church buildings were needed, and ministers had to be supported, and it also cared for the religious work among many foreign-language groups. During 1928 a total of \$2,903,609 was expended on this work, not including \$475,500 appropriated for the liquidation of debt. There were two Women's Missionary Societies: The Foreign and the Home, which reported receipts for the year amounting to \$5,525,310.

The educational system administered by the Board of Education included 46 colleges and universities; 30 secondary or preparatory schools; and 43 professional and graduate schools. Among the colored people, they maintained 17 schools, of which 10 were colleges, 4 secondary, and 3 professional schools. The attendance of the Church schools amounted to 71,859, besides those in professional schools; the faculty numbered 4000; property was valued at \$81,000,000, and the endowment amounted to \$74,000,000. The

Church also had 77 hospitals; 44 homes for the aged; 43 homes for children; 60 deaconesses' homes; and 27 homes for business girls and young men. The value of these was \$58,885,754. There were 28,966 church buildings worth \$436,187,008; 16,292 parsonages, valued at \$64,893,243; and 33,994 Sunday schools with an enrollment of 4,559,001; the Epworth League, the young people's society of the Church, had a membership of 619,760.

The membership of the Methodist Episcopal Church for 1927 was 5,236,754. The statistics of general Methodism in all branches, as reported from London, were: Ministers, 59,824; lay preachers, 93,081; church members, 11,869,388; Sunday schools, 79,372; officers and teachers, 1,023,673; scholars, 10,086,907; churches, 105,596.

520; and Epworth Leagues to the number of 1192 with a membership of 36,923. The amount raised during the year for educational purposes was \$336,920; for Sunday schools, more than \$300,000; and for salaries of pastors, bishops, and general officers, \$1,369,800. The Church in co-operation with the Methodist Episcopal Church, South, maintains "Bethlehem Houses," social service centres, in Birmingham, Ala., Chattanooga, Tenn., Augusta, Ga., and Nashville, Tenn. The following periodicals are published by the Church: *Christian Index*, *Western Index*, *The Index Herald*, and *Colored Methodist*. The headquarters are at Jackson, Tenn.

METHODIST EPISCOPAL CHURCH, SOUTH. A separate branch of the Methodist Episcopal Church formed in 1845 over the question of

GENERAL STATISTICS OF METHODISM, 1928
[From the Methodist Publishing House of London]

These statistics are the latest procurable. The members in Junior Classes are not reckoned

Denomination	Ministers	Lay Preachers	Church Members and Probationers	Sunday Schools	Officers and Teachers	Sunday Scholars	Churches, etc.
Wesleyan Methodists:							
Great Britain	2,540	19,082	520,378	7,344	119,316	813,839	8,620 *
Ireland	244	598	29,697	332	2,238	22,955	410
Foreign Missions	766	11,528	298,667	3,000	10,807	166,918	5,488
French Conference	29	66	1,808	25	91	694	99
South African Conference	282	5,608	169,533	1,000	3,295	45,777	4,674
Primitive Methodists	1,090	13,284	222,744	3,960	54,442	386,412	4,539
United Methodist Church	545	4,724	146,802	2,062	37,777	237,269	2,208
Wesleyan Reform Union	26	471	10,875	224	2,489	24,982	222
Independent Methodist Churches	392	...	10,825	167	3,216	24,512	166
Australasian Methodist Church	1,242	5,689	181,832	3,574	26,540	195,877	4,549
New Zealand Methodist Church ^b	181	749	24,624	438	3,184	30,570	910
United States:							
Methodist Episcopal ^c	21,240	15,232	4,781,357	34,631	405,306	4,633,828	29,074
Methodist Episcopal, South	8,304	5,264	2,602,316	16,346	172,760	2,014,788	19,368
Methodist Protestant	1,211	346	193,188	1,888	16,948	183,251	2,263
African Methodist Episcopal (Col'd)	7,315	...	721,692	7,200	...	320,000	7,390
African Meth. Epis. Zion (Col'd)	3,460	...	500,000	...	...	193,000	3,442
Colored Methodist Episcopal	2,638	...	333,002	2,543	...	192,000	3,579
Free Methodist	1,334	...	40,437	1,346	...	103,676	1,231
Wesleyan Methodist	627	493	22,990	603	5,456	41,694	553
Primitive Methodist	84	...	12,061	87	...	16,807	87
Congregational Methodist	125	...	9,691	80	515	4,807	145
New Congregational Methodist	25	...	1,229	27	143	1,298	26
Union American Meth. Epis. (Col'd)	319	...	22,219	...	...	...	304
African Union Meth. Prot. (Col'd)	200	...	4,086	42	273	2,851	43
Ref. Zion Union Apostolic (Col'd)	44	...	4,538	36	212	1,508	48
Ref. Meth. Union Epis. (Col'd)	40	...	1,371	18	204	1,792	28
Colored Methodist Protestant	33	...	1,967	24	125	1,016	26
African Methodist Protestant	675	...	27,000	...	...	...	650
African American Meth. Epis.	35	...	5,811	25	...	934	27
United Church of Canada	3,986	...	637,750	5,873	62,675	556,895	7,467
Japan Methodist Church	158	140	29,420	554	...	42,570	162
Totals	59,185	83,274	11,629,950	93,458	928,012	10,263,320	108,098

* Seating accommodation, 2,430,080.

^b These figures include the Solomon Islands Mission with 64 lay preachers, 4,791 members, 41 Sunday schools, 1384 scholars, and 122 churches and preaching places.

^c Methodism is also represented in several European countries by Conferences and Missions affiliated to the Methodist Episcopal Church of America, and their membership is included in the figures given above. The latest returns available are: Austria, 1042 members; Bulgaria, 757; Denmark, 4201; Finland, 2254; France, 1094; Germany (North), 23,200; Germany (South), 18,054; Hungary, 692; Italy, 3860; Jugo-Slavia, 1298; Norway, 7567; Russia (and Baltic Mission), 2168; Sweden, 16,475; Switzerland, 11,938.

METHODIST EPISCOPAL CHURCH, COLORED. Several churches of the Methodist faith and form, composed of colored members. One of these, the Colored Methodist Episcopal Church, formed in 1870 as an offshoot of the Methodist Episcopal Church, South, effected the separation from that body of its remaining colored membership. Its quadrennial general conference was held at Kansas City, Mo., May, 1926, when it reported 10 bishops (one retired). It sponsored 14 schools and a hospital at Memphis, Tenn., and maintained missions in Trinidad, and the British West Indies. In 1928 there were 3636 traveling clergymen and 2192 local clergy; churches numbered 4342, with 470,208 members; there were 3142 Sunday schools with an enrollment of 278,-

slavery. Figures for 1928 show that there were 55 conferences and missions, of which 42 were in the United States and 13 in foreign countries.

The executive body is the College of Bishops, which in 1928 had 13 members who hold office for life. The denomination sponsors 248 educational institutions, including 32 universities and colleges, 21 academies, and 46 mission schools. The report for 1928 showed 8321 traveling preachers, 4891 local preachers, and 2,631,570 members; there were 17,403 churches which had a valuation of over \$160,000,000; and 6649 parsonages, with a valuation of \$26,496,223. Sunday schools numbered 16,346, and Sunday-school scholars, 2,014,788; Epworth Leagues, 9168 with 263,884 members. The contributions for all purposes for

1927 amounted to \$43,026,473. The important periodicals of the denomination are the *Methodist Quarterly Review*, and the *Christian Advocate*. The headquarters of the Church are in Nashville, Tenn. The secretary of the last General Conference was A. F. Watkins.

METHODISTS, CONGREGATIONAL. A group of Methodists organized at Forsyth, Ga., in May, 1852, for the purpose of securing a more democratic form of church government. Statistics for 1928 report 145 churches; 125 ministers; 9691 members; 80 Sunday schools and 4807 scholars.

METHODISTS, WESLEYAN METHODIST. The principal branch of the Methodist denomination in Great Britain and Ireland, founded at the University of Oxford in 1739 by John and Charles Wesley, and holding its first Conference at London in 1744. This is the mother church of the denomination and is composed of five divisions: Great Britain; Ireland; Foreign Missions; French Conference; and South African Conference. The Wesleyans are governed by the Conference, by the Synods, and by Quarterly Meetings of the ministers and lay officers of each circuit, the latter being subordinate to the Conference which has the supreme legislative and judicial power. Statistics for all the divisions in 1928 were: Ministers, 3861; lay preachers, 36,882; church members and probationers, 1,020,128; Sunday schools, 11,710; Sunday-school scholars, 1,436,595; churches, etc., 19,291. In Great Britain alone the churches numbered 8620, members, 520,373, lay preachers, 19,082, and ministers, 2540. In 1928 the officers were: Pres. designate (1929), the Rev. Dr. William Frederick Lofthouse, Endcliffe Cottage, Friary Road, Handsworth, Birmingham, England; secretary of the Conference, the Rev. Robert Bond, 107 Palace Road, Tulse Hill, London, S. W. 2. See also article on **METHODIST CONNECTION OF AMERICA, WESLEYAN**.

PRIMITIVE METHODIST CHURCH. Commonly known as the "Camp Meeting Methodist," organized in Staffordshire in 1810, the American church being organized in 1844, as a result of the evangelization movement in the early part of the nineteenth century, by Hugh Bourne, one of the leaders and founders of the movement in England. The Primitive Methodists in Great Britain and Ireland for 1928 numbered 4353 chapels, 1090 ministers, 13,284 lay preachers, 222,744 members, and 386,412 Sunday-school scholars. The Church maintains a publishing house at Holborn Hall, Clerkenwell Road, London, E. C., 1. Next to the Wesleyans this is the most numerous and most democratic of the denominations which have arisen out of the Methodist movement. The American branch of the Church reported 87 churches, 87 ministers, 12,061 members, 87 Sunday schools with 16,807 scholars in 1928, and the sum of \$383,154 raised for all purposes. The last General Conference, which meets quadrennially, was held in September, 1925, at Kenanee, Ill.

UNITED METHODIST CHURCH. Formed in England in 1907 by the union of three denominations of Methodists which had hitherto been separate from, and independent of, each other: The Methodist New Connexion; the Bible Christians; and the United Methodist Free Churches. In 1928 there were 2208 churches, 545 ministers, 4724 lay preachers, a church membership of 146,802, and 2062 Sunday schools with 37,777 teachers and officers and 237,269 scholars. Publishing

House, 12 Farrington Avenue, London, E. C., 4. See **METHODIST EPISCOPAL CHURCH**.

WESLEYAN REFORM UNION. One of the smaller divisions of the denomination. It separated in 1850 from the Wesleyan Methodists and organized as a separate body in 1859. The adherents are mostly in the Midland counties. In Great Britain and Ireland in 1928 there were 222 chapels, 26 ministers, 471 lay preachers, 10,875 members, and 24,982 Sunday-school scholars.

INDEPENDENT METHODIST CHURCHES. These churches were founded in 1796, and united with other societies in 1806. The title was changed twice, but in 1898 the old name was resumed. In 1928 there were 166 churches with 10,825 members and probationers and 392 ministers; 167 Sunday schools with 24,512 scholars, and 3216 officers and teachers. The annual meeting was held in June, 1928.

AUSTRALASIAN METHODIST CHURCH. Methodism in Australia dates from 1812, the first conference being held in 1855. In 1928 there were 4849 churches; 1242 ministers; 5689 lay preachers; 181,832 members; and 3574 Sunday schools, with an enrollment of 195,877. Publishing houses were maintained in Sidney, Melbourne, Adelaide, Brisbane, and Perth.

Other branches of the denomination include the New Zealand Methodist Church and the Japanese Methodist Church, for statistics of which, see **METHODIST EPISCOPAL CHURCH**. Also see **CANADA, THE UNITED CHURCH OF**.

In Great Britain a scheme for the reunion of the Wesleyan Methodists, the Primitive and the United Methodist churches was approved by all three Conferences. In the case of the Wesleyan Methodists, the plan was referred to the Provincial Synod for further consideration and approval. To secure the adoption of this scheme it would be necessary to have an Enabling Bill passed in Parliament. This was considered probable and it was anticipated that a United Conference would meet in 1933 for the first time.

METROPOLITAN MUSEUM OF ART. See **ART EXHIBITIONS**; **ART MUSEUMS**; **ART SALES**.

METROPOLITAN OPERA HOUSE. See **MUSIC** under *Opera*.

MEXICAN BEAN BEETLE, FRUIT WORM, ETC. See **ENTOMOLOGY, ECONOMIC**.

MEXICO. A federal republic lying between the United States and Central America. Capital, Mexico City.

AREA AND POPULATION. The area of the Republic, which is divided into 28 states, one Federal district, and two territories is 767,189 square miles. The population, according to the census of 1921, was 14,234,799 of whom 6,974,213 were males and 7,287,586 females. The prevailing religion is Roman Catholic, but according to the new constitution of 1917, the church is separated from the state, and there is toleration of all other religions. No ecclesiastical body can acquire landed property. Mexico City, the capital of the Republic, had a population of 615,367, of whom 23,668 were foreigners, at the census of 1921. Other large cities are Guadalajara, 119,468; Monterey, 73,528; San Luis Potosi, 68,022; and Merida, 62,447.

The reported immigration in 1927 was 67,970 and the emigration 56,534, but there is a considerable movement across the northern boundary which is not fully reported.

EDUCATION. Early in the year, the Secretary of Education made public the following statistics

on the status of the schools throughout the Republic in October, 1927. These returns were declared to be somewhat incomplete because of the lack of full response to inquiries. Total number of schools, 15,479, divided as follows: Kindergartens, 378; rural schools, 10,136; other elementary schools, 4467; secondary and preparatory schools, 67; normal schools, 65; professional schools, 57; schools of fine arts, 23; and technical, industrial, commercial, and vocational schools, 278. Schools supported by the Federal Government were attended by 252,988 boys and 161,276 girls, while in those supported by the state and municipalities there were 402,616 boys and 348,525 girls. Pupils in private schools numbered 17,298. The total for the nation was therefore 1,183,333. Up to July 31, 1928, the university enrollment was 9379.

AGRICULTURE. There are about 30,028,000 acres of cultivated land in Mexico (about 6 per cent of the total area), 120,440,000 acres of pasture, and 43,993,000 acres of forests. In 1927 about 8,020,000 acres were cultivated with corn, 1,227,000 acres with wheat, and 306,000 with cotton. In 1926 there were 5,121,000 cattle, 2,693,000 swine, 2,381,000 sheep, 4,899,000 goats, 964,000 horses, 622,000 mules, and 732,000 asses. The production of the principal crops in 1927 was as follows: Wheat, 11,519,000 bushels; barley, 4,302,000 bushels; corn, 81,165,000 bushels; rice, 3,410,000 bushels; beans, 7,153,000 bushels; coffee, 60,295 pounds; cotton, 74,567 pounds. The sugar production in 1926 was 194,700 metric tons. It was estimated that 5887 carloads of perishable vegetables were shipped to the United States during the 1927-28 season as compared with 6289 carloads during the 1926-27 season.

In his message to Congress on Sept. 1, 1928, the President of Mexico described the work realized during the previous year in the development of agriculture throughout the country. During the period covered by the message, efforts for the extension of agricultural education, propaganda, and experimentation took visible form in the founding of new schools, and the giving to others of lands, buildings, and adequate equipment; a systematic study of the most important agricultural zones of the country was initiated with the object of making a soil map of the country; and measures were taken for the protection of agriculture against plant and animal plagues and diseases, for the conservation and rational development of natural resources, and the distribution of water. Studies and work on irrigation projects were continued energetically. Various of these projects were expected to be completed during 1928, among them the Calles, the Rio Mante, and Don Martin projects, which will permit the irrigation of 118,000 hectares.

MINERAL AND METAL PRODUCTION

Product	1926	1927
Gold .....1000 troy ounces...	773	725
Silver .....do.....	98,133	104,576
Copper *metric tons....	53,763	58,747
Lead *do.....	200,381	248,595
Zinc *do.....	105,387	136,471
Antimony *do.....	2,614	1,924
Arsenic (white) .....do.....	6,458	9,018
Graphite (amorphous) .....do.....	4,485	5,837
Mercury *do.....	45	81
Petroleum, crude ...1000 barrels...	90,610	64,121

* Metallic content of ore extracted.

MINING AND PETROLEUM. The value of the principal minerals produced in 1927, exclusive of

crude petroleum, was \$152,199,000 as compared with \$162,937,000 in 1926.

Petroleum production amounted to 64,121,000 barrels during 1927, 29 per cent less than in 1926. In 1921, the highest point ever reached, 198,398,000 barrels were produced. The great decline was owing to the encroachment of salt water and to the decreased drilling resulting from the refusal of the Government to grant permits to the oil companies that had not complied with the law. See preceding YEAR BOOK. The permits issued in 1927 numbered 804, as compared with 1622 in 1926. During 1927, 204 wells, with an initial capacity of 384,000 barrels were brought in, as compared with 318 wells of 1,107,000 barrels in 1926. In October, 1928, it was estimated, on the basis of statistics for the first six months of that year, that the total production for 1928 would show a decline of at least 12,000,000 barrels, or about 20 per cent, from that for 1927.

Mexico is not an important manufacturing country, but several industries, such as the manufacture of textiles (mostly of cotton), shoes, iron and steel, tobacco products, beer, flour, paper, cement, pottery, and other products of lesser importance, had developed to some extent, certain of them as a result of a protective tariff. Mexican industries have only the domestic trade for a market, not having, as yet, been able to compete successfully in foreign markets.

COMMERCE. During 1928 total imports amounted to 346,588,000 pesos, a decrease of 9 per cent from 1926. Exports amounted to 624,364,000 pesos, likewise a decline of 9 per cent. According to United States statistics, imports from Mexico aggregated \$137,815,000 and exports amounted to \$109,152,000 in 1927. In 1926 imports from Mexico were \$169,306,000 and exports \$134,994,000. American imports, therefore, suffered a decrease of 18.6 per cent and exports declined 19.1 per cent. In the same period, the United Kingdom reported exports to Mexico dropped 20.8 per cent, and imports from that country 8.6 per cent, while German exports fell off 2 per cent, imports increasing 57.3 per cent.

FINANCE. For the year 1928, revenues were estimated at 290,000,000 pesos and expenditures at 289,000,000 pesos. The estimates for 1927, after revision, placed total receipts at 334,300,000 pesos and expenditures at 326,000,000 pesos, of which 216,900,000 pesos were for administrative expenditures, and 70,000,000 pesos for the service of the public debt, and most of the rest for public works. Despite subsequent reduction of expenditures in the face of declining revenues, a deficit of about 6,000,000 pesos resulted at the end of the first half of the year and a further deficit of about 19,000,000 pesos was forecast for the second half. The decline in government revenues was attributed to the drop in petroleum production and in foreign trade. The Secretary of the Treasury made an announcement revealing the impossibility of meeting interest on the public debt in 1928.

COMMUNICATIONS. The following items regarding the activities of the Department of Communications and Public Works form part of President Calles' annual message to Congress, read on Sept. 1, 1928:

During the past year the postal service in Mexico was carried on through 655 offices, 51 branch offices, 2160 agencies, 118 offices on trains, 17 transfer offices, 978 places for sale of stamps, and over 2342 land, 30 sea,

24 lake, and 1 air route, a total distance of 81,487 kilometers (kilometer equals 0.62 mile). The receipts from the service were 12,674,044.67 pesos and the expenditures 11,017,106.34 pesos, leaving a balance of 1,656,938.33 pesos. A system of postal savings was begun on February 5, 1928, and counted as deposits on June 30 the sum of 475,232 pesos, an amount which will undoubtedly increase in the near future, since beginning August 1, 1928, 2 per cent interest is being paid on accounts.

The national telegraph service through its 513 telegraph, 1 telephone, and 144 telegraphic offices, and 24 radiotelegraphic stations, handled during the year 5,588,213 messages, totaling 136,809,516 words, or an increase of 6,255,934 words over those of the previous year. The receipts of this branch of the service reached 5,371,899 pesos, being greater by 80,696.49 pesos than those of the preceding year, while the expenses, 6,699,830.13 pesos, were 70,806.67 pesos less. The value of money orders sent by telegraph amounted to 69,884,911.87 pesos, increasing 9,634,764.29 pesos over the previous year.

From the 23,237.4 kilometers of national railways, of which 22,881.5 kilometers were in use during the year, receipts of 176,189,604.90 pesos were reported; expenditures amounted to 162,931,441.21 pesos and the net income, therefore, to 13,258,163.39 pesos, or 1,322,263.64 pesos more than that of the year previous. A total of 126 kilometers of new line was constructed during the year and the stretch on the Mexican Railway between Córdoba and Paso del Macho was electrified.

The postal, express, and passenger service by airplane between Tuxpan and Tampico to Mexico City covered 351,276 kilometers in 2631 flying hours, transporting more than 1800 passengers and 5334 kilograms of mail in 1900 regular and 328 special flights from its inauguration on April 15, 1928, to the end of August. The Department of Civil Aeronautics has granted permits for aviation schools in Mexico City, Guadalajara, Nuevo León, and the northern district of Southern California, and registered 15 airplanes which make daily flights for recreational purposes.

Railway construction in Mexico, according to the *Railway Age* (New York) revived during 1928. The National Railways of Mexico completed three short extensions, totaling 18 miles, while construction was prosecuted on three major projects: the Mexico-Tampico short line, 333 miles; a line from Tampico to Vera Cruz, 313 miles, and a line from Calles to Guerrero, 78 miles. In addition, two new lines were being located and a number of others were projected. This road also carried on the construction of large repair shops at Monterey, in the state of Nuevo León during the year. The Kansas City, Mexico & Orient completed a 40-mile extension in Chihuahua which carried its line to Ojinaga on the Rio Grande at the International Boundary.

GOVERNMENT. Under the constitution of 1917, executive power is vested in the President, elected by direct popular vote for four years and ineligible for reelection; legislative power in the Congress consisting of the House of Representatives elected for two years by universal suffrage, and the Senate, comprising two members from each State, elected in the same manner. President in 1928, Plutarco Elias Calles (elected July 6, 1924; assumed office Nov. 30, 1924). For the change in the presidency during 1928, see below.

HISTORY

SITUATION AT THE BEGINNING OF THE YEAR. As noted in the preceding YEAR BOOK there were several pressing problems in Mexican affairs during 1927. By the close of that year the oil problem was well on its way to being settled. Most observers gave great credit to Ambassador Morrow for his skillful handling of the vexatious problem. The following amendments were passed by the Mexican Congress late in December, 1927, and promulgated by President Calles early in 1928.

Article 14. The following rights shall be confirmed without cost and by the issuance of confirmatory concessions: (1) Those arising from lands on which works of petroleum exploitation were begun prior to May 1, 1917. (2) Those arising from contracts executed prior to May 1, 1917, by the surface owner or by his successors in interest, for the express purpose of petroleum exploitation. The confirmation of these rights shall be granted without limitation of time whenever they should run in favor of the surface owner; and for the terms stipulated in the contracts in the case of rights originating from contracts executed by the surface owners or their successors in interest. (3) Those pipeline and refinery operators who may be working at the present time under concessions or authorizations issued by the Department of Industry, Commerce, and Labor, and in so far as refers to the said concessions or authorizations.

Article 15. A period of a year, reckoned from the day following publication of these amendments to the same day, inclusive, of the following year, is hereby granted, within which the interested parties may apply for the confirmation of the rights to which the foregoing article refers, and which have not been the object of confirmatory applications within the period allowed by this law in its original terms. This period having elapsed, said rights shall be considered as renounced, and the rights whose confirmation has not been applied for shall have no effect whatever against the Federal Government.

The promulgation of this law ended the long dispute between foreign oil companies and the Mexican Government over the retroactive provisions of the famous constitution of 1917. It confirmed all the claims made by the companies that their previous contracts were inviolable. Of course, the weight of the diplomatic department of the United States Government was thrown in on the side of the oil companies to uphold the tenet of law which the American Republic has always maintained, namely, that a state may not pass a law impairing the obligations of a contract. The effect on the oil industry was doubtful. Production during 1928 fell to a new low level, and in many quarters it was believed that Mexico would never regain her place among the oil-producing countries of the world.

Another matter of passing interest which was settled in the early months of the year was the question of the Mexican documents published in the Hearst newspapers. See preceding YEAR BOOK. A special committee of the U. S. Senate declared them to be absolute forgeries and absolved all United States officials of any shady dealing with the Mexican Government. Senator Robinson bitterly attacked Mr. Hearst for publishing the documents without first taking some pains to discover whether they were above suspicion.

The struggle between the Church and State went on apace in the early part of the year. Reports were current in the press to the effect that the Government was taking stern measures to close up any schools operating under Catholic auspices in defiance of the country's laws. Various acts of brigandage were laid at the doors of Catholic conspirators and arrests and deportations were common occurrences. There seemed to be a feeling, however, that the Calles government planned to compromise the religious issue and to reestablish friendly relations with the Church if it could be done without danger to the successful elevation of the State to a position of first rank.

OBREGON. General Alvaro Obregon was elected President of the Mexican Republic at the general elections held on July 1. He was the only candidate, inasmuch as two other prominent candidates had been assassinated, namely, Francisco Serrano and Arnulfo Gomez. General Obregon had served as President of the Republic from



GENERAL ALVARO OBREGON
President-Elect. Assassinated July 17, 1928



EMILIO PORTES GIL
Elected Provisional President

MEXICO

1920 to 1924, and was known as the leader of the agrarian element of the labor movement. Less than three weeks after his election, General Obregon was assassinated (July 17) by a young student, José de León Toral. (See OBREGON, ALVARO.) The motives for the act were confused because of the attempt to prove complicity on the part of the church and the trade-union element of Mexican labor under the leadership of Louis N. Morones, a bitter opponent of Obregon and the agrarian element in the labor movement. The conflict between the agrarians and the labor element had been going on for years. During the Calles régime, the Obregon agrarians were opposed to the labor forces under the leadership of the President. For the first two years of his administration, President Calles was an out-and-out opponent of Obregon, but as the latter's strength grew, Calles completely capitulated to the agrarian leader. This brought about a sharp split between Calles and Morones, the actual head of the laborites. It was thought in some quarters that Ambassador Morrow was instrumental in patching up a peace between Calles and Obregon. Feeling against Morones ran so high that he was virtually forced from the Calles government.

The death of Obregon left the schism between the peasants and the agrarians wide open and the only strong man appearing on the scene was President Calles, who had a well-disciplined army at his back. He reiterated again and again that he desired to retire as soon as his term of office was up. Undoubtedly, revolution could not very well occur while he still held the reins of power, but the pressing question was "After Calles, what?" He stated in his address to Congress on September 1 that he was not a candidate for the provisional presidency and that he would never again be a candidate for office. He strongly advised Congress to go about the problem of selecting a provisional president with great care and caution.

On September 25, the Mexican Congress elected Emilio Portes Gil, a civilian, and apparently the choice of President Calles. In his election, the Obregon bloc which controlled Congress split apart and many agrarians went over to the labor group under President Calles. Señor Gil was elected for the term Dec. 1, 1928, to Feb. 5, 1930. A constitutional president was to be elected in November, 1929, to hold office until 1934. Portes Gil was comparatively young, a man of 37, a lawyer by profession, and served as Governor of the State of Tamaulipas before being called to President Calles' cabinet as Minister of the Interior.

In the meantime the prosecution of the assassin of General Obregon was proceeding in an orderly fashion. From statements that he made from time to time, it was quite evident that his deed had been inspired by the fanaticism of his religion. On trial with him was a Roman Catholic nun, Mother Superior Maria Concepcion, who was accused as the "intellectual" leader behind the plot. After a trial held early in November, José Toral was sentenced to death by a firing squad and Mother Superior Maria Concepcion to twenty years' imprisonment.

On November 30, Portes Gil was officially sworn in as Provisional President of the Republic. His cabinet as announced on that day was as follows: Interior, P. O. Rubio; War and Marine, General Amaro; Foreign Affairs, General Estrada; Industry, Commerce, and Labor, J. M.

P. Casauranc; Agriculture, M. Gomez; Communications, I. S. Mejorada; Finance, L. M. de Oca; Education, E. Padilla; Attorney-General, E. Medina.

MEYER-WALDECK, mî'ér-vâl'dĕk, ALFRED. German naval officer, died at Bad Kissingen, August 26. He was born at Petersburg, Nov. 27, 1864. Entering the German Navy, he became captain-lieutenant in 1897, and from 1900 until 1901 he was first officer on the cruiser, *Geier*, in the Baltic Sea. In 1908 he became chief of staff at Kiaochow, a German protectorate on the Shantung peninsula. The following year he was made captain, and in 1911 he was appointed governor of the protectorate in China. On Aug. 19, 1914, at the beginning of the World War, Japan demanded that Germany surrender Kiaochow, but Captain Meyer-Waldeck held Tsingtau, a city in the Kiaochow territory, until November 7, when he was forced to capitulate and fall prisoner to the Japanese.

MICHELSON-MORLEY EXPERIMENT. See PHYSICS.

MICHIGAN. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 3,668,412. The estimated population on July 1, 1928, was 4,591,000. The capital is Lansing.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Hay	1928	2,870,000	4,327,000 *	\$50,013,000
	1927	3,078,000	4,801,000 *	52,632,000
	1928	1,461,000	51,135,000	42,953,000
Corn	1927	1,418,000	38,995,000	33,146,000
	1928	887,000	14,202,000	18,164,000
Wheat	1927	897,000	19,270,000	23,124,000
	1928	1,633,000	58,461,000	25,138,000
Oats	1927	1,617,000	54,170,000	26,002,000
	1928	306,000	35,802,000	14,321,000
Potatoes	1927	289,000	23,120,000	20,808,000
	1928	538,000	5,918,000	26,335,000
Beans, dry	1927	566,000	4,811,000	14,433,000
	1928	65,000	423,000 *	.....
Sugar beets	1927	99,000	698,000 *	4,996,000
	1928	270,000	8,100,000	5,670,000
Barley	1927	186,000	5,301,000	4,029,000
	1928	182,000	2,866,000	2,200,000
Rye	1927	178,000	2,617,000	2,329,000
	1928	.....	.....	.....

* tons.

MINERAL PRODUCTION. Iron ore continued to rank as the leading mineral product, but the shipments of iron ore fell off somewhat, being 14,532,831 long tons for 1927, as against 16,699,984 for 1926; in value, \$37,135,364 for 1927 and for 1926, \$43,932,982. There were shipped from blast furnaces in the State 626,532 long tons of pig iron in 1927, and in 1926, 638,282; in value, \$12,527,993 in 1927 and in 1926, \$13,180,113. Connected with the coal and iron industries was the production of 1,923,000 short tons of coke in 1927, as against 1,826,638 tons, having a value of \$12,713,083, in 1926. The coal output of the State remained small in relation to its coke and smelting operations. It was 756,763 net tons in 1927, and in 1926, 686,707; in value, \$3,262,000 for 1927 and for 1926, \$2,829,000. Second to coal production, in value, was that of copper. There were mined in 1927, 166,146,437 pounds of recoverable copper, as compared with 175,381,565 in 1926. Value of copper mined was: 1927, \$21,765,183; 1926, \$24,553,419. Cement production again increased, to 13,965,241 barrels for 1927, from 12,037,400 for 1926; cement shipments totaled \$20,858,202 for 1927, and for 1926,

\$19,499,788. There was a large production of salt; in quantity, 2,271,460 short tons in 1927 and 2,260,320 in 1926; in value, \$7,551,552 for 1927 and for 1926, \$7,594,418. Clay products were: 1926, \$7,362,007; 1925, \$7,396,071. Stone output was: 1926, \$6,715,429; 1925, \$6,671,804. The total value of the State's mineral products, duplications eliminated, was \$130,860,609 for 1926; for 1925, \$122,212,254.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$52,610,366 (of which \$16,473,879 was aid to local education); for conducting public services, \$107,503; for interest on debt, \$4,310,218; for permanent improvements, \$20,993,112; total, \$78,021,199 (of which \$22,658,709 was for highways, \$6,918,611 being for maintenance and \$15,740,098 for construction). Revenues were \$77,455,784. Of this, property and special taxes formed 49.5 per cent, departmental earnings and charges for officials' services 8.7 per cent, and sales of licenses and gasoline tax proceeds 32.7 per cent. Property valuation was \$8,106,019,642; State taxation thereon, \$29,334,245. Net State funded debt on June 30, 1927, was \$74,909,093. There were outstanding \$50,000,000 of highway bonds.

TRANSPORTATION. The number of miles of railroad line under operation in the State on Jan. 1, 1928, was 8260.77. There were built in 1928, 2.19 miles of additional first track and 9.64 of second track.

EDUCATION. The life teaching certificate, according to State Superintendent Pearce, writing in the *Journal* of the National Education Association, ceased to be granted save to students who had completed three years of work above high school, in one of the four State teachers' colleges. The school-age population for 1927 was placed at 1,247,932. There were enrolled in the public schools of the State 880,442 pupils, and in the parochial and private schools, 145,219. The enrollment in elementary schools was 716,458; in high schools, 128,165. Expenditures of the year for education totaled \$80,853,940. Salaries of teachers averaged \$212 a month for men and \$158 a month for women.

CHARITIES AND CORRECTIONS. The State Welfare Department includes the State Welfare Commission with powers of parole over the inmates of certain institutions, duty of inspection of jails, maternity hospitals, and children's boarding homes, and control over probation officers and county agents. It included, also, four commissions in charge of groups of State institutions. The State institutions of care and custody included State hospitals at Kalamazoo, Pontiac, Traverse City, Newberry, and Ionia; Michigan Home and Training School, Lapeer; State Prison, Jackson; Michigan Reformatory, Ionia; Branch Prison, Marquette; Boys' Vocational School (correctional), Lansing; Girl's Training School (correctional), Lansing; schools for the deaf and for the blind, Lansing; Employment Institution for the Blind, Saginaw; State Public School, Coldwater. The 5 State hospitals for mental diseases had on Jan. 1, 1928, 7937 patients.

POLITICAL AND OTHER EVENTS. Woodbridge N. Ferris, Senator from Michigan, died March 23. Governor Green appointed Arthur H. Vandenberg, Republican, of Grand Rapids, on March 31 to fill his place. The State brought quo warranto proceedings against the Michigan Bell

Telephone Company, in an effort to obtain the submission of the parent company, the American Telephone and Telegraph, to the jurisdiction of the State public service commission. In the first seven months of the operation of the law for life imprisonment of fourth offenders, only four sentences of this sort were passed. An effort was made in the spring to obtain the resentence of some 70 prisoners under the act. The cornerstone of the Women's League Building was laid at the University of Michigan at Ann Arbor, March 29. Steps were taken in the course of the year to form a merger of the Chrysler Corporation and the Dodge Brothers Corporation into a single great motor vehicle producing organization. Patrolling the Detroit River to guard against liquor smugglers led to a shooting episode which occasioned protest on the part of the Canadian Government in April. Efforts at Detroit to apply alcoholic tests upon persons accused of drunken driving were refused attention in May in the Recorder's Court of that city. The Wayne County Board of Supervisors authorized May 21 the purchase from the United States of Fort Wayne, with a surrounding tract of 86 acres, at a price of \$2,459,354, for use as a park. A plan, supported by necessary legislation, for the widening of Woodward Avenue, Detroit, to a breadth of 204 feet, with removal and replacement of the Grand Trunk Railway tracks to supply the necessary space, was declared valid by the State Supreme Court July 24. At a special election on April 2, Detroit voters approved an issue of \$30,000,000 of bonds for sewer construction. Municipal reports of the profitable operation of the city's motor-bus system were controverted in June by the consulting engineer of the Detroit Street Railway, who alleged that municipal operation was conducted at a loss of \$260,492 in 1927.

ELECTION. The vote of November 6 rendered, as usual in recent presidential years, a Republican majority of more than 2 to 1 for the Republican National ticket. The Republican majority was below that of 1924, however, while the total vote was above those of 1920 and 1924. Fred W. Green, Republican, was reelected governor, defeating W. A. Comstock, the Democratic candidate. A. H. Vandenberg, Republican and Senator by interim appointment, was elected to the United States Senate both for the unexpired term and for the regular term to follow. The State's 13 members of the House of Representatives, all Republican, were reelected. The referendum vote of the State was favorable to an excess condemnation amendment, to a proposal to raise the legislators' salary, and to a legislative districting law. A proposal in the city of Detroit, sponsored by Mayor Lodge and calling for the expenditure of \$20,000,000 for a city and county building, was defeated; the voters of the city approved a bond issue of \$5,000,000 for a municipal landing field at Lynch and French roads.

The presidential vote of the State was: Hoover (Rep.), 965,396; Smith (Dem.), 396,762.

OFFICERS. Governor, Fred W. Green; Lieutenant-Governor, Luren D. Dickinson; Secretary of State, John S. Haggerty; Treasurer, Frank D. McKay; Auditor, Oramel B. Fuller; Attorney-General, William W. Potter; Superintendent of Public Instruction, Webster H. Pearce.

JUDICIARY. Supreme Court: Chief Justice, Nelson Sharpe; Associate Justices, Howard Wiest, George M. Clark, John E. Bird, John S. McDon-

ald, Richard C. Flannigan, Walter H. North, Grant Fellows.

MICHIGAN, UNIVERSITY OF. A State institution for the higher education of men and women at Ann Arbor, Mich., founded in 1837. The University, made up of ten colleges and schools, admits graduates of accredited high schools to the college of literature, science, and arts, to the colleges of engineering, architecture, and pharmacy, and to the training school for nurses, as well as to the special programme for dental hygienists and the curriculum in physical education. In 1927-28 the enrollment was 13,593, of whom approximately 35 per cent were women, while 64 per cent were inhabitants of the State of Michigan, and the remaining 36 per cent, with the exception of 280 foreign students, were from all parts of the United States. Of the total enrollment, in the regular and summer sessions, 6370 were in the college of literature, science, and arts; 1974 in the colleges of engineering and architecture; 944 in the medical school; 118 in the school of business administration; 251 in the nurses' training school; and 2096 in the graduate school. The registration in the 1928 summer session was 3505. The teaching staff was composed of 742 members. The University libraries contained 681,025 volumes. For current expenses, the State appropriated \$4,600,000, while about \$4,000,000 was derived from other sources. A new building for intramural sports was begun during the year and, with the exception of a few minor items, was completed by the end of the year. President, Clarence Cook Little, Sc.D., LL.D.

MIDDLEBURY COLLEGE. A coeducational, non-sectarian college at Middlebury, Vt., founded in 1800. For the autumn term of 1928 a total of 620 students were registered as under-graduates, and 6 as graduates, of whom 289 were women and 337 men. The enrollment in the special summer schools of French, Spanish, and English, conducted by the college, amounted to 517. There were 59 members on the faculty, including administrative officers and those on leave of absence. The productive funds of the College amounted to \$3,330,598 in 1927-28, and the income to \$299,783. The library contained 60,000 volumes. Gifts to the College amounted to \$126,219. President, Paul D. Moody, D.D.

MIDDLE CONGO. See FRENCH EQUATORIAL AFRICA.

MIGRATION OF BIRDS. See ZOOLOGY.

MILES, BASIL. American diplomat and economist, died at Washington, D. C., June 14. He was born at Philadelphia, Pa., June 20, 1877, and was educated at the University of Pennsylvania and Balliol College, Oxford. After a brief business experience, he became (1899-1902) master of St. Mark's School, Southboro, Mass., at which he had prepared for college. From 1902 to 1905 he was again at Balliol, preparing a course of study on the economic results of the American Revolution. His first diplomatic post was that of secretary to the American Ambassador G. von L. Meyer, at St. Petersburg, 1905-07; at the same time he held the post of third secretary of the embassy. From 1907 to 1908 he was third secretary at Berlin. From that city he was called to Washington to become supervisor of foreign mails at the Post Office Department. After three years in charge of the Washington office of the United States Chamber of Commerce, 1913-1916, in which period he was also editor of

The Nation's Business, he reentered the diplomatic service as a special representative of the United States, with the rank of minister, and was sent to Russia to take charge of German and Austrian prisoners in that country. When America entered the World War, in April, 1917, Mr. Miles made a visit to Siberia to report on conditions there. Following that mission, he returned to Russia to become secretary of the Root Commission, and then formed in the State Department at Washington, for the first time, a division of Russian affairs, of which he was made chief. He was executive secretary of the Washington Conference of Armaments, and secretary of the American delegation, 1921-22. From the latter year until his death he was American administrative commissioner to the International Chamber of Commerce.

MILITARY PROGRESS. GENERAL. In the YEAR BOOK for 1927 there were discussed the articles of "F. F.," an unannounced author contributing his thoughts on "Danger Zones" to American service journals. While political and economic conditions were the bases of his arguments, the conclusions were military and naval in every sense of the words and danger zones often are likely to result in wars. His articles continued to attract attention and especially interesting were those on the Balkans which seriously menace the peace of the world, and Italy's aspirations under Mussolini.

Macedonia is, to quote the author, the main centre of Balkan woes. Turkish misrule and tyranny have implanted greed, deceit, distrust, and violence as common characteristics of the people. The only effective law is the law of force. Turkey has sought to retain possession of this province, Serbia, latterly Jugo-Slavia, Bulgaria, and Greece have each tried to seize parts of the disputed ground. Even Rumania has taken an active interest in these efforts to divide Macedonia.

The unchecked acts of terrorism committed by Bulgar-Macedonian *comitadjis* were an active threat to Balkan peace. The *comitadjis* are an active band of professional cut-throats. Instead of acting in large armed bands, they were sending out agents singly or in twos or threes from Bulgaria to execute the desired assassinations in Greece and Jugo-Slavia. The Bulgarian Government claimed to be powerless to stop those outrages. The reason was apparent. Macedonia is important because it controls the main north and south line of communications that serves the whole Balkan peninsula. It is a first class international highway. Fear of Italy is the only thing that the Balkan States have in common. Italy's thrust into Albania had alarmed these States and revived the rivalries of the great European powers.

This brings to attention Italy. Exactly what share of the world Mussolini would eventually demand for Italy no one knew. His policy was largely the result of dissatisfaction with settlements made at the end of the World War. Italy expanded her territory to the north and northeast in conformity with the 1915 Treaty of London, under which she entered the War, but received no part of the German Colonies when they were divided among the Allies. Italy's population was 40,000,000 and the annual increase so large that the surplus was constantly overflowing her boundaries. Mussolini's only remedy was to secure territory which would accommodate the

emigrants and still keep them under Italian sovereignty.

This accounts for his aggressive foreign policy, and how-it works was to be seen in Albania which had become practically an Italian Protectorate in spite of the League of Nations' guarantee of its independence.

The economic development of Albania was proceeding apace with Italian *military* engineers in charge. Control of Albania gave Italy control of the Adriatic and nullifies the strategic value of Jugo-Slavian seaports. Albania provided Italy with an almost impregnable base for land operations on the Balkan peninsula.

Any one of a dozen major problems in the Balkans may cause spontaneous combustion which would invite Russian and Turkish participation, with France and Great Britain inevitably brought into the conflict.

These articles of "F. F." are well worth serious study.

A survey of the military expenditures and the armed forces of the principal countries of the world prepared for the Foreign Policy Association reveals a general increase in man power and military expenditures over 1913. This survey shows that in 1928, ten years after the war to end wars, 6,011,300 men were serving in the active forces of the fifty-two principal countries of the world, while 27,285,000 were enrolled in the trained reserves and subject to military service in case of war.

In Western Europe, where Germany and her former Allies had been virtually disarmed under the peace treaties, the vast majority of countries had increased their man power far above the 1913 level.

While the regular army of Germany had been reduced to 100,000, the Entente Powers had increased their armies from 1,446,500 to 1,810,000 and the six new states carved out of Austria-Hungary and Russia had placed 474,000 men in active service. Italy shows the most striking increase, with 346,900 men under arms in 1928, as against 250,000 in 1913. The Belgian Army had increased from 42,000 in 1913 to 71,000; Rumania from 95,000 to 266,000; Greece from 25,000 to 79,600; Jugo-Slavia from 32,000 to 142,000, and Portugal from 30,000 to 34,900. The British Forces not including the Native Indian Army numbered in 1913, 253,000, in 1928, 212,000; the French had a strength of 720,000 in 1913 as compared with 666,900 in 1928.

The question whether or not reserves should be limited by the League disarmament conference split the Preparatory Commission. France, whose reserves in 1913 were 3,280,000 and in 1928, 5,000,000 opposed limiting reserves. Germany, Austria, Hungary, and Bulgaria had not been permitted to organize reserve forces.

While all of the former European neutrals, except Spain, had reduced their standing armies below pre-war strength, they had more than trebled their reserves. Norway from 80,000 to 315,000; Denmark from 56,000 to 150,000; Netherlands from 145,000 to 341,000; Spain from 235,000 to 1,853,000; Switzerland from 252,000 to 309,000, and Sweden from 400,000 to 720,000.

In South America, Brazil raised her standing army from 21,000 to 46,000; the Argentine, from 21,500 to 33,700; Chile, from 28,000 to 46,000; Bolivia, from 3000 to 8000; Colombia, from 6000 to 9900, and Mexico, from 31,000 to 76,000. The

United States, from 89,000 in 1913 to 136,000 in 1928. Japan reduced her active army from 250,000 in 1913 to 210,000 in 1928, but increased her reserves from 950,000 to 2,038,000.

Military expenditures showed a similar increase over pre-war outlays, corresponding closely to the growth of armed forces. There had been a total reduction in the Central Powers of \$200,000,000, while the European Allies had increased their total by \$188,000,000.

MECHANIZED EQUIPMENT. In the way of military progress during 1928, air and mechanized equipment exhibited the greatest development, and in the latter case, tanks. Recent European developments in the matter of tanks leads to the following summary by Maj. Ralph E. Jones, Infantry Instructor, Tank School, Fort Leonard Wood, Maryland.

Czechoslovakia has the KH-50, an 8-ton tank that uses wheels on the road and caterpillar tracks across country with a wheel speed of 20 miles per hour and a caterpillar speed of 8 miles per hour. A skilled crew can change from wheels to tracks or the reverse in three minutes, but it cannot do this from the inside. Each tank carries a radio set.

Sweden. The M-21 is a 9½-ton tank that has a speed of 13 miles per hour, with a radio set.

Russia has the light French Renault, light Russian Renault, medium tank A, heavy tank Mark V (star), heavy tank Mark VII. Their 80-ton tank with speed of 6 miles per hour and armor plate from .6 to 1.6 inches, carrying two 76-mm. guns and four machine guns, is an interesting development. In Russia all armored detachments are under the supervision of the Chief of Artillery.

Italy has the Fiat type 3000 (light) and the Fiat-type 2000 (heavy) tanks. The light tank is a 5-ton, 2-man tank with a maximum speed of about 14 miles per hour. The heavy one is much the same as our (I. E. U. S.) Mark VIII as to weight and speed. The Italians use as a carrier for their light tank, a trailer with a low floor. Their tank organization is tentative with a personnel of about 1200, officers being drawn from the various branches of the army.

France. The French have a very light and fast experimental Renault, Mark V (star), 2-C type, Schneider heavy (experimental) 180-ton tank. The Renault tank, improved, is still the main light French tank. There are on hand about 3000. They have less than 100 of the Mark V (star) tanks, these being replaced by the 2-C type. This type is the heaviest tank in service anywhere. Ten have been built. They weigh from 68 to 74 tons, have a speed of six miles per hour and carry one gun (either 75 or 155 mm.) and four machine guns. Its maximum armor thickness is about 2 inches.

Artillery fire at very close range and with special ammunition would probably be necessary to stop this tank. It may be transported by rail by means of special equipment. It uses two stroboscopes, one forward and one at the rear. Its transmission is electric. There is also in construction a Schneider tank to weigh about 180 tons. It is fairly obvious that French thought is chiefly concerned with stabilized warfare situations. France seems to have introduced a 10-tire motor vehicle, an excellent cross-country vehicle which has 10 over-size tires, eight of which transmit power from the engine. In front there are two single wheels for steering. In the back one pair receives the power but is connected to another pair by chain, all four being power connected. Since each of these four wheels is double width and has two tires, there are eight driving tires. A rather important development, this.

France has twelve tank regiments of two battalions of three companies each. A French regiment has two complete sets of tanks. The war set is kept in first-class condition and is habitually in storage. It is used for only two weeks of annual manœuvres. The other set is used for daily instruction. In the event of war, reservists, already assigned would man the latter set. French tanks are a part of the Infantry, one tank regiment of light tanks being an organic part of an army corps.

England. Strange to say, to date England is the leader in tank development. England's inclination is primarily toward open warfare. That is the only place in the world where any real effort has been made to develop a mechanized force (including tanks) for offensive action. She has discarded all wartime tanks. The company and battalion are equipped with radio tanks.

Fast six-wheeled trucks are used in conjunction with the mechanized force with a speed of 45 miles per hour.

In organization, the British policy is not to have the tanks subordinate to any other arm. The Royal Tank Corps concentrates on the idea of an independent mechanized force which will screen, make flank raids and similar manoeuvres, but little thought is put upon their use with infantry.

In her experiments England has tried the Al-man machine-gun tank, wheel-and-track type, weighing about 2½ tons with track speed of 20 miles per hour, wheel speed 30 miles.

A 5-ton 2-man type with a maximum speed of more than 30 miles per hour is another development. Several models of tanks weighing from 10 to 10½ tons, most armed with one 3-pounder gun and several machine guns. In some types one or two machine guns mounted on top for anti-aircraft use.

One of these 12½-ton wheel-and-track type has a track speed of 20 miles per hour and wheel speed of 30 miles per hour. There is a 40- to 50-ton tank with armor to resist .50 calibre armor-piercing ammunition. It is armed with one semi-automatic 3-pounder and four machine guns with a 15-mile speed per hour and a crushing radius of 200 miles on one fill. In this type, the change either way can be made in about two minutes, the crew remaining inside.

United States. Contrasted with this, in the United States but little or nothing definite has been done since the World War to develop vehicles or organization for motor-driven armored combat. In December, 1927, the Tank Board received from the Ordnance Department for test a 23-ton tank. It is well armored, carries a 6-pounder gun and two machine guns. It requires a crew of three men. Its road speed is 10 miles per hour and cross-country speed 5 miles.

The Secretary of War, in his annual report, stated that in plans for modernizing the military service by motorization and mechanization in order to give greater mobility to troops:

One regiment of infantry has been completely motorized as an experimental unit. The cavalry units of the Regular Army have undergone a complete reorganization, which has served to reduce overhead, increase fire power and introduce anti-tank and anti-aircraft defenses without adverse effect upon the all-important cavalry characteristics of mobility. An armored car unit, the first in the history of the regular establishment, has been introduced.

The first armored-car troop of cavalry became a part of the 1st Cavalry Division at Fort Bliss, Texas, when six speedy automobiles, four of a light type and two heavily armored, became part of the equipment of the armored-car troop. Its duties are "to extend the horizon of cavalry and to broaden the scope and facility of its reconnaissance." Fifty or sixty miles is all the troop can do in a day. This organization, authorized in February, 1928, is a part of the general scheme of mechanization and the first test of a mechanized war force in its 2000-mile journey from Fort Leonard Wood, Md., to Fort Bliss, Tex. This force combined units of infantry, including tanks, air corps, field artillery, engineers, coast artillery, anti-aircraft, chemical warfare, ordnance, and an armored-troop ammunition train and medical detachments.

Notwithstanding this American development, progress was pitifully behind hand, running true to form as a national policy where preparation for defense is concerned.

The light car is only slightly armored, built to do cross-country work, carry a crew of three, a driver and two gunners, and mount two guns, the rear gun being an anti-aircraft mount.

In the general scheme of mechanization, trucks will be used to transport cavalry from a base to a point of attack. Troop F, 5th Cavalry, marched from Marfa, Tex., to Fort Clarke, Tex., 300 miles, when men and horses, on arriving at destination, detrucked and were fit and ready to go into action.

GREAT BRITAIN. Great Britain according to a press dispatch had made Gibraltar one of the most powerful fortresses of the world. Gigantic guns of the latest and most deadly pattern had been placed along the edge of the great "Rock" replacing those of smaller calibre formerly at sea level. The most elaborate system of range finding was installed, and it was possible for the big guns to fire straight into the continent of Africa, 14 miles away. Miles of space had been reclaimed from the sea for huge new docks, shipways, wharves, and jetties. There is an enclosed harbor of 440 acres where an entire fleet may anchor. It is the most formidable sea fortress ever known.

The question whether cavalry had ceased to be of value in the light of advances in modern inventions seemed to be answered, if not affirmatively, rather convincingly, by Field Marshal Viscount Allenby. The functions of the cavalry arm, distant reconnaissance and tactical reconnaissance, have been effected, for the air forces now take care of the former and mechanized means the latter, for tanks, armored cars, and the like have proved their value, but notwithstanding their asset value in regard to fire power, mobility, invulnerability, and endurance, which are real and great—

Their claim to have superseded cavalry cannot be accepted. The work of contact and linking up of units on wide battle fronts will still fall to the cavalry; the eyes of this arm are not hooded; it has clearer vision than the purblind armored car, its mentality is more alert. The more vulnerable the machine, the blinder the crew. The mounted man of today is strong in fire power. He has, moreover, the assistance of mechanized vehicles to carry ammunition and warlike stores, thus increasing his mobility.

This portrayal of cavalry and its uses must be welcome news to this honored branch of the service, coming as it does from this distinguished leader and soldier.

The British Army estimates for the year 1929 were £41,000,000 for the regular army, territorial army, and reserves, these being lowered by 25,000 men. Sir Laming Worthington-Evans, the War Minister, stated that the army was nothing more than an empire police force. He spoke of the anti-war treaty as "a great step forward," and if nations renounce war as a policy, why should they not reduce armaments. He served as War Minister in 1921 and since 1924 in that portfolio. During the World War, he served as major.

IRELAND. In 1928 the army of the Irish Free State was about 8500 strong and was an alert and well-trained force. The cost of the army was about \$10,000,000 annually. Its final strength was to be about 5000, a skeleton that might be expanded quickly in time of need by drawing on the reserves and the new force volunteers that were to be enrolled. A college for training officers on American lines was to be established at Carragh once the headquarters of the British Cavalry formerly garrisoning the land.

CANADA. Canada's army had an actual strength of 329 officers and 3189 others in the fiscal year 1927-28. It was known as the Permanent Active Militia. Of the non-permanent militia, the volunteer forces under the control of the central Government, 27,603 were trained during the year, and of these, 7134 went to camps and the rest were trained at local headquarters. The Royal Canadian Air Force, a permanent

body, had 95 officers and 375 airmen—Major General H. C. Thacker commanded. The main objective was to maintain sufficient unity of organization to permit of the rapid mobilization of a fully equipped first line of defense in time of need. The formation of civilian air clubs, which would be auxiliaries to the Royal Canadian Air Force in military as well as peace duties was a new governmental plan getting under way and promising success. The Government supplies a plane or planes and instruction according to active membership in the club, its willingness to provide an airport and requisite amounts for upkeep. The cost of the Army and Navy for the fiscal year 1927-28 was \$15,077,573. The air corps had 670 fliers.

SPAIN. A ministry of war was created with General Burgente as its chief, November 3, as a part of the reorganization of the Spanish Government.

FRANCE. The Council of Ministers heeded the impressive arguments of M. Laurent Eynac, the newly appointed French Secretary of Air, and despite the war and navy arguments to the contrary, the following eight branches of the air service were given to him; military aviation, general service of naval aeronautics, bureau of colonial aviation, civil aviation including technical and industrial offices, administration of air lines and the meteorological bureaus, aviation stock and supplies, general inspection of aeronautics, technical inspection of aeronautics, and, finally, of creating an independent air army for national defense of which he was to be the chief.

The Associated Press quoted General Guillaumat, Commander-in-Chief of the French Rhine Army, under whose direction were the fall maneuvers, as saying that:

The difficulty in the employment of cavalry divisions lies in the great variety of elements of which they are made up, some mounted, others on foot, yet others on wheels, with the complication of automobiles and caterpillar tractors. Extensive cavalry action in future warfare will undoubtedly prevail, but the complete ignorance on this branch of the service because of the character of the war of the trenches, will have to be overcome.

The signing of the treaty for the outlawry of war (see KELLOGG-TREATIES) found three million men under arms on the Continent of Europe. In 1914 the total of peace effectives was close to four and one-half million men, so that the 1928 status represented a reduction of one-third. In detail, Germany had reduced her standing army from 800,000 to 100,000, not voluntarily it is true; Austro-Hungary, from 425,000 to less than 210,000; Russia, from 1,300,000 to an estimated strength of 540,000; while France had reduced her army from 850,000 strong in her home and colonial army to about 700,000.

A report of the League of Nations showed a notable decline in budgetary proportions in the matter of expenditures on armaments, viz: Belgium 10 per cent, France from 35 per cent to 16 per cent, Italy from 31 per cent to 18 per cent; but the proportionate reduction was only due to the enormous increase in National expenditures. Comparative figures did little to bring out the radical change in the nature of the armament problem during the previous 10 years.

From the *Armaments Year Book* for 1927-28 issued by the League of Nations toward the end of the year, it may be ascertained that the annual expenditures on preparation for war were, for

armies, \$2,400,000,000 and navies, \$1,100,000,000. The number of soldiers serving their whole time with the colors was about 5,500,000, representing standing armies. Comparing with the population of the world, taken as 1,800,000,000, this means 1 soldier to every 300 civilians. In the United States of America, this ratio is 1 soldier to 800 civilians; for Latin-America, 1 to 360; Canada, with its 9,000,000 citizens, has 3500 permanent troops; Panama's National defense consists of "a general, and two majors, and the outlay of a military band"; Japan's ratio is 200,000 troops to 60,000,000 civilians, or 1 to 300.

It may be broadly stated that throughout the entire English-speaking world and its dependencies, whether American or British, this military ratio is a minimum. In Latin-America the ratio is higher than this minimum. In the Far East it is still higher, while in Europe it reaches its maximum. The problem of Armaments involves much more than the arithmetic of armies and navies. There is what France calls "potential," the animal, vegetable, and mineral reserves of the various countries, the length of their coast lines, density of population, development of their railways, and other imponderable factors, including diplomatic commitments. Hence, it is maintained by certain authorities that the problem of limiting armaments by treaty is practically insoluble and the real question is whether public opinion accepts such demurrers as final.

AVIATION. The main lines of American development since the Armistice of 1918 and especially in 1928 have been increased speed of all types of aircraft, engines of increased reliability, refinement in aircraft design, improvement in photographic equipment, radio communication, armament, instruments, parachutes, methods of laying smoke and gas, increase in tactical and operating efficiency, attainment of standard efficiency in new pilots through better methods of training and inspection, improvement in design of airdromes, including technical buildings. Radio enables the control of flights of planes, and the sending and receiving of messages at distances up to 500 miles.

The attack plane, A2, is a two-seater, weighs 4400 pounds, cruises at about 115 miles an hour, has a maximum speed of 140 miles and a ceiling of 18,000 feet. Six machine guns and 250 pounds of small bombs are its armament. The A3 flies at low altitude and is devised principally for protection of ground troops and for attack against enemy material and personnel.

The observation plane is a two-seater, weighs 4200 pounds, has a cruising speed of 110 miles per hour and a high speed of 140. Its ceiling is 18,000 feet. The bombing, LB-5, or pirate, has a total weight with armament and crew of 12,000 pounds, two liberty motors, 2000 pounds of bombs, machine guns fore and aft, ceiling about 10,000 feet, a cruising speed of 85 miles per hour, and high speed of 110 miles.

Flying training has been extended and systematized with the result "it is believed that the training system which has been developed in the Army Air Corps is 'second to none in the world'" (Report of Secretary of War for fiscal year 1928). The number of aircraft hours flown increased from 150,319 in 1925 to 182,903 in 1928, an indication of the enlarged activities of the Air Corps. To form the first increment of the

Air force of 1248 non-commissioned officers and privates, the Regular Army had to be reduced in all its branches except medical, signal, and air. Another increment in the air service was to be due the ensuing fiscal year.

For the training of troops, the U. S. War Department expected to publish *Notes on Infantry Protection Against Aircraft*, the subject being of intense moment to the Infantry and, according to the *Infantry Journal*, it was to receive priority of study and experimentation by the Infantry Board, the Department of Experimentation, and Academic Board of the Infantry School.

The most noteworthy change in the tactics employed by air attack was the development of mass tactics in attacks against ground troops. The basic method of attack by single airplanes remained unchanged. The planes dive at ground targets, discharging machine-gun fire from frontal guns while in the dive, drop 25-pound fragmentation bombs from low altitudes while overhead, and cover their retreat with fire from rear machine guns. The attack planes carry from six to eight machine guns and 10 small bombs.

The Infantry Division has 176 machine guns, 144 in the Infantry brigades and 32 in the Artillery brigade. A squadron of 25 attack airplanes has 200 machine guns, showing that the actual number of machine guns per squadron is greater than that of the division.

Extracts from the teachings of the Air Corps Tactical School shed light on recent developments—

Daylight attacks on columns are normally made in formation, the size of which varies from the 3-plane unit to a full squadron of 25 airplanes. Ordinarily the smallest formation that will be sent out will be the six-plane flight. A nine-plane formation may be employed when the target requires more strength than a flight of less than a squadron. The squadron formation may consist of two 9-plane formations or three 6-plane flights. The 6-plane flight is the basic formation for making attacks proper. The 9-plane formation is the largest force that will attack as a formation. A squadron or group attack takes the form of simultaneous or successive flight attacks on the objective.

The question of night attacks by airplanes brought out discussion as to whether they were worth while. That successive attacks by individual planes during the hours of darkness constitute the most effective night attacks is admitted. Whether these will secure delaying and harassing effects on material and personnel of a column is not satisfactorily determined. These methods are particularly applicable to the all-night harassment of bivouac areas where the moral effect and the breaking up of the rest of troops is more desirable than material damage.

During the year, 3833 applicants for air training were received by the Army for the fiscal year ending June 30, 1928, as against 1063 the year before. Of this number only 506 were able to qualify.

There were less than 700 reserve officers capable of flying with tactical units without further tactical training at a school. Practically \$40,000 was expended during the year for flying pay of enlisted men on regular duty and for sergeant instructors of National Guard and Organized Reserves (Report of Maj. Gen. Féchét, Chief of Air Corps).

RADIO. The commercial value of traffic handled over the U. S. Army radio net in the fiscal year for the various Federal governmental departments was \$284,228. Since 1923 there had been a steady increase in the traffic yearly, it being

for that year \$65,701.61. The actual cost of sending this traffic in 1927-28 was \$43,340.95. The War Department, of course, was the heaviest user, the value of its traffic being \$211,615.85. The Veterans Bureau, Commerce Department, Labor Department, Agricultural Department, Department of Justice, and Navy all made use of the service.

The Signal Corps completed the new receiver for use with aircraft radio sets, superseding standard receivers in use. It is considerably lighter in weight, occupies much less space, is rugged, and receives continuous wave signals. A joint development of the Signal and Air Corps was the double voltage direct engine-driven generator for use in aircraft, eliminating the necessity of supplying a dynamotor with each radio set and effecting a saving in weight and cost and increasing the dependability of operation. A new type of insulated field wire used by soldiers in the field was lighter and less bulky and promised to have strength and transmission qualities that were satisfactory. The design and construction of three test models of a wire-laying cross-country car and that of a horse-drawn reel cart were accomplished during the year. These with the developments in the sphere of fire control equipment, indicated satisfactory solutions.

Notwithstanding all the improvements in motorization and mechanization, the horse was still a very important factor in the military organization. During the year there was one animal to every 3.3 men. During the Civil War the proportion was 1 to 3.75 men.

SCHOOLS. The missions of the Command and General Staff School announced by the War Department were as follows: First: To train officers in the tactics and technique of the associated arms; the operations of large units to include the corps; the functions of commanders, staff, and services of large units to include the corps and corps area general-staff duty as pertains to the zone of the interior.

Second: To teach military history, including methods of historical research of tactical principles.

Third: To prepare instruction material for the command and general-staff course in Army Correspondence Schools.

Beginning the school year 1928-29, the course of the Command and General Staff School was to be two years instead of one.

During the fiscal year ending June 30, 1928, Germany paid \$13,637,866 towards reducing the total claim of the United States of \$233,141,247 for reimbursement cost of maintaining the Army of Occupation. The balance due the United States on that date was \$210,582,775. It is interesting to note that in the matter of 300,000 wartime contracts entered into between April 6, 1927, and Nov. 12, 1918, \$5,077,886 had been recovered, \$20,767,103 cancelled, \$15,662,325 referred to General Accounting Office, and \$28,615,195 to the Department of Justice.

On June 30, 1928, the actual strength of the Active Army of the United States was 134,505, exclusive of nurses, contract surgeons, and West Point cadets. There were 699 Army nurses, 33 contract surgeons, and 878 cadets or a total of 136,115 in the service. Of this number there were 12,112 commissioned officers on duty and 121,185 enlisted men, this including Philippine Scouts. The distribution of troops was as follows: 96,366 in the United States, 14,083 in the

Hawaiian Islands, 1282 in Porto Rico, 11,343 in Philippine Islands, 989 in China, and 7 in Europe in the graves service.

Less than one-third of the commissioned officers were West Point graduates, namely, 3544. The sources of appointment were as follows:

Civil Life	3,428	Enlisted Men, Reserve Corps ...	205
West Point.....	3,544	Enlisted Men, National Guard ...	271
Enlisted Men, Regular Army ...	1,119	Volunteer Officers	43
Officers, National Army	253	Volunteer Enlisted Men	16
Enlisted Men, National Army ...	275	Officers, National Guard	331
Officers, Reserve Corps	2,184	Balance scattered	

The strength of the Organized Reserves on June 30 was 120,288. The enlisted reserve corps was 5464. There were 90,765 officers of National Guard holding commissions in Reserve Corps. The net increase in Reserve Officers during the year was 4810.

Speaking of the National Guard, the Secretary of War said in his annual report, "It has attained the highest plane of military effectiveness in the peacetime history of this element of our national defense forces . . . it is now more highly organized, more completely equipped, and more thoroughly trained than at any time in the past; its standards have never been higher." Of the National Guard Air Corps, 23,991 flying hours resulted in only three fatalities. New training planes had completely replaced the old JN planes of wooden construction.

ORDNANCE. At the tenth meeting of the Army Ordnance Association at Aberdeen Proving Ground on October 4, an anti-aircraft 3-inch gun mounted on a moving truck demonstrated its ability to compute and hold its own range, ascertaining the height of the approaching airplane through sound waves. It was expected to be developed into one of the most useful of defensive weapons against aircraft. The new tank, T-1, 7½ tons, had attained a speed of 18 miles across country and 22 miles on public highways. The aim in the evolution of the tank has been to develop speed, the gas engine making this possible. There were four of this type and they cost about \$100,000. Their cruising radius is 80 miles. The crew, a driver and a gunner, is protected against the service rifle at all ranges. In the all-around fire turret are mounted a 37-mm. gun and a 0.30-calibre machine gun. The mechanical control is simple, the engine of commercial type. A comparative test of the cumbersome slow-moving tanks of the World War period and the 7½-ton craft produced by the United States was made during July on a practice march from Fort Leonard Wood and Upper Marlboro in Maryland, a distance of 22 miles. Two hundred and fifty tanks were in column. The 7½-ton tank averaged better than 10 miles per hour. The British and French tanks constructed during the World War are now regarded as obsolete.

In the development of anti-aircraft guns, including a 3-inch gun and mobile mount, and a new 105-mm. gun and carriage designed for joint use in defense operations a marked advance was made by the ordnance branch of the Army. Improved mounts were developed for anti-aircraft guns. For the mobile mount of the 3-inch gun, stability, mobility, and manoeuvring ability were achieved. The carriage is stable under all

conditions of firing, may be replaced from the traveling position in readiness to fire in about 15 minutes, and is so light in weight it can be towed across country by a standard four-wheel drive truck. The gun is 50 calibres in length and is made of an outer tube and inner removable liner. This liner represents a marked advance in gun construction as it does away with the necessity for sending a worn-out gun to an arsenal for retubing. The cost of a liner is a small fraction of the cost of a new gun, and it can be installed at the firing front in a few minutes by battery personnel using simple hand tools. The gun fires a standard 3-inch projectile at a muzzle velocity of 2600 feet per second. The vertical range is about 5000 yards and the maximum horizontal range, 11,000 yards.

CUBA. The Cuban Army in 1928 celebrated the twentieth anniversary of its organization. Although the Guardia Rural, a State constabulary, was organized at the establishment of the Cuban Republic and in 1928 was still the largest component part of the military establishment, a regular army was provided for the island in 1908. The Ejército Permanente was formed that year with a general-staff corps, an infantry brigade, a coast-artillery corps, a field-artillery arm, and a machine-gun corps. In 1928 it included 1616 officers and 12,187 enlisted men, enlistments being voluntary. Organized as Cavalry, the Guardia Rural includes 168 officers and 6320 enlisted men of the entire military force. The highest permanent commission is that of colonel. The Chief of Staff selected from colonels, holds the temporary rank of Major General, while the Adjutant General and Quartermaster General hold the grade of Brigadier General.

Promotion by selection modified begins in lower grades. The island is divided into eight military districts with a colonel in command, corresponding generally with provinces of the island. The Province of Havana, containing 25 municipalities, is covered by three military districts.

ITALY. General Francisco de Pinedo, Italy's long-distance flier, was made head of the Italian Aeronautical General Staff. He holds the distinction of having twice crossed the Atlantic in flight. According to a press report in the *New York Times* in late August, the annual manoeuvres of the Italian Army demonstrated that Mussolini had at his disposal a more efficient fighting machine than had existed at any time in the history of the Kingdom. A new tactical code containing all the lessons learned in the last war concerning the use of large units in battle, elaborated by the general staff, was used for the first time. In addition, Fascist voluntary militia made their appearance side by side with the regular army. This was a regular feature in the Italian Army, it being intended that in actual war each division of the army shall comprise four battalions of Fascist militia to be employed as shock troops.

In mechanical devices, a new instrument for throwing hand grenades to a maximum range of 200 yards from ordinary rifles was in evidence. Italy's War Department Budget provided for an increase of 41,500,000 lire (\$2,075,000) for 1929-30.

GERMANY. The French Army of Occupation numbered about 48,000 concentrated at Mayence, Coblenz, and in smaller towns. A British force of 6250 held the Weisbaden Bridge head and

approximately 6000 Belgians the strip of territory on Dutch and Belgian boundaries near Aix-la-Chapelle. Mayence was French general headquarters.

RUSSIA. Not much comes out of Russia regarding the Red Army. The anniversary of the Bolshevik Revolution was celebrated on Nov. 7, 1928, by a military parade. A foreign military expert was quoted as follows: "The Red Army leaders do not share the obsession of some Western soldiers that the next war will be a siege war like the last. Should the Soviet be involved in conflict, it would be a war of rapid movement across sweeping plains where cavalry and light artillery would play a bigger rôle than the huge howitzers." The Soviet Budget for army and navy was 840,700,000 rubles, this military expenditure being an increase of 13.2 per cent over the previous year.

MILITARY TERRITORY OF THE NIGER. A territory under the Governor-General of French West Africa. Capital, Zinder. See FRENCH WEST AFRICA.

MILK. See DAIRYING.

MILLIKAN, ROBERT A., EXPERIMENTS OF. See PHYSICS.

MILWAUKEE. See WISCONSIN.

MINERAL DEPOSITS. See GEOLOGY.

MINERALOGICAL CHEMISTRY. See CHEMISTRY.

MINERALOGY. The advance of mineralogy during 1928 is represented by tendencies rather than by definite and startling discoveries. In this way, the science, as compared with other sciences, may be placed with regard to its progress, in that transition period of its development when observational research is being superseded by theoretical interpretation of data. The growing knowledge regarding the arrangement of atoms in natural substances led to an increasing tendency toward the utilization of these natural substances in industrial development, and to link these data with recent advances in our knowledge of physical forces. Such has been the volume of research in the field of crystal structure that we are led to believe that future utilization of the results of mineralogical research will be along this line rather than along that of chemical adaptation.

The new mineral species which were added to the science during 1928 form a fairly long list, comparing favorably in this respect with those reported in previous years. An extensive fire, which occurred in a mine of pyritic ore at Jerome, Arizona, resulted in the deposition by hot gases of a number of chemical products of a semi-artificial nature. Several of these have been studied and named, and because of the involuntary and widespread circumstances accompanying their formation, they are here included among the new minerals. They are: *Guildite*, a chestnut-brown, hydrous iron-copper sulphate forming in monoclinic crystals and named in honor of Prof. F. N. Guild of the University of Arizona. *Butlerite*, named in honor of Prof. G. M. Butler of the University of Arizona, is a hydrous ferric sulphate, that forms very small orange-yellow orthorhombic crystals. *Jeromite*, named from the mining locality, is a sulphide and selenide of arsenic, which was observed as black fused globules. *Louderbackite*, named in honor of Prof. G. D. Louderback of the University of California, is a hydrous sulphate of ferrous and ferric iron, forming in pale chest-

nut-brown crystalline crusts. *Rogersite*, named in honor of Prof. A. F. Rogers of Stanford University, is a hydrous ferric sulphate which differs slightly in composition from butlerite. It was found in fibrous aggregates of monoclinic crystals. *Ransomite*, named in honor of Prof. L. L. Ransome of the California Institute of Technology, is a hydrous sulphate of copper and ferric iron occurring in sky-blue orthorhombic crystals.

Argentina furnished two new species, *bodenbenderite* and *klockmannite*. The first of these is a silicate and titanate of manganese, yttrium, aluminum and calcium, occurring in flesh-red isometric crystals. It was found in the Sierra de Cordoba and was named in honor of Prof. Wilhelm Bodenbender of Argentina. *Klockmannite* is a new copper selenide which has been found in Sierra de Umango, Argentina, and also in the Harz district of Germany. It occurs as metallic slate-blue, granular masses, and was named in honor of Prof. F. H. Klockmann.

Franklin, N. J., a locality long famous for the number of rare and unusual minerals that have been found in its zinc mines, contributed two species to the number discovered in 1928. *Larsenite*, named in honor of Prof. E. S. Larsen of Harvard University, is a lead and zinc silicate occurring in colorless orthorhombic prisms. A white, massive mineral, having the same composition as larsenite but with some of the lead replaced by calcium, has been named *calcium-larsenite*.

Two new vanadates were discovered in Bull Pen Canyon, Colorado, and named in honor of Dr. C. S. Ross of the U. S. Geological Survey. Of these *rossite* is a hydrated vanadate of calcium and *metarossite* is a partially dehydrated product of *rossite*.

A new member of the isomorphous group of iron phosphates which is headed by jarosite was found in southern Utah and named *ammonio-jarosite*, because the potash, present in normal jarosite, is in this mineral replaced by ammonium oxide. It occurs in nodules of an ochre-yellow color.

A new hydrated calcium, magnesium, and iron phosphate, occurring in concentric layers in nodules of phosphorite from British Columbia, was named *Collinsite*, after Dr. W. H. Collins, Director of the Geological Survey of the Dominion of Canada.

Slavikite, named in honor of Prof. F. Slavik of Prague, is a new hydrated sulphate of sodium and ferric iron, which occurs in small greenish-yellow rhombohedral crystals on weathered shales from Bohemia.

Sursassite is a new manganese and aluminium silicate occurring in copper-red fibrous aggregates at Oberhalstein, Switzerland. The name is derived from Sursass, an antique dialect name for the locality.

A new hydrated oxide of tungsten and thorium, related to tungstite, has been named *thorotungstite*. It occurs in masses of small, yellow crystals at Perak, Malay Peninsula.

See CHEMISTRY, under *Mineralogical Chemistry*.

MINERAL PRODUCTION OF THE UNITED STATES. The total value of mineral production in the United States in 1928 was estimated at approximately \$5,400,000,000 by the U. S. Bureau of Mines. This was a decrease of approximately 2 per cent of the total value

MINERAL PRODUCTS OF THE UNITED STATES, 1926-1927 *
[United States Bureau of Mines]

Product	Quantity	1926 Value	Quantity	1927 Value
METALLIC				
Aluminum	pounds.....	\$87,583,000	.....	\$39,266,000
Antimonial lead ^b	short tons (2000 pounds) 22,524	3,916,714	24,347	3,277,043
Antimony ^c	do.....	856,400	2,736	675,800
Bauxite	long tons (2240 pounds) 392,250	2,415,200	320,940	1,988,780
Cadmium	pounds.....	429,527	1,074,654	645,000
Chromite	long tons.....	141	2,079	.....
Copper, ^d sales value	pounds.....	1,739,622,094	1,684,040,983	220,609,000
Copper, ^e	long tons.....	689,258	646,749	55,163,574
Ferro-alloys	troy ounces.....	2,335,042	2,197,125	45,418,600
Gold ^f .....	.....	.....	.....	.....
Iron:				
Ore ^g	long tons.....	69,292,832	61,232,473	151,125,820
Pig	do.....	38,181,053	34,866,644	646,226,139
Lead (refined), ^h sales value	short tons.....	680,685	668,320	84,210,000
Manganese ore (35 per cent or more Mn)	long tons.....	46,258	1,228,663	1,151,918
Manganiferous ore (5 to 35 per cent Mn) ^j	long tons.....	1,217,431	3,138,489	3,947,016
Mercury:				
Metal	flasks (75 pounds net) 7,642	702,323	11,276	1,314,782
Ore	do.....	51,000	(^k)	(^k)
Nickel (value at New York City)	do.....	323	234,558	860
Ores (crude), tailings, etc.:				
Copper	do.....	57,636,000	(^l)	(^l)
Copper-lead and copper-lead-zinc	do.....	282,000	(^l)	(^l)
Dry and siliceous (gold and silver)	do.....	8,743,000	(^l)	(^l)
Lead	do.....	8,358,000	(^l)	(^l)
Lead-zinc	do.....	19,093,000	(^l)	(^l)
Zinc	do.....	4,139,000	(^l)	(^l)
Platinum and allied metals (value at New York City)	troy ounces.....	84,981	46,050	3,780,216
Silver	do.....	62,718,746	60,434,441	34,268,828
Tin (metallic equivalent)	short tons.....	8	10,400	34,400
Titanium ore:				
Ilmenite	do.....	(^j)	(^j)	(^j)
Rutile	do.....	(^j)	(^j)	(^j)
Tungsten ore (60 per cent concentrates)	do.....	1,382	920,400	1,164
Uranium and vanadium ores	do.....	21,624	329,000	(^k)
Zinc, ^d sales value	do.....	611,991	91,799,000	576,960
Total value of metallic products (approximate)		\$1,402,920,000		\$1,217,000,000
NONMETALLIC				
Arsenious oxide	short tons.....	11,805	674,350	(^l)
Asbestos	do.....	1,385	134,731	2,981
Asphalt:				
Native	do.....	715,180	4,484,960	839,040
Oil ^f	do.....	1,245,160	15,452,940	1,525,420
Barite (crude)	do.....	237,875	1,773,293	248,219
Borates (colemanite and naturally occurring sodium borate)	short tons.....	115,970	3,128,110	109,080
Bromine	pounds.....	1,345,760	426,837	1,756,310
Calcium-magnesium chloride	short tons.....	82,340	1,710,405	95,721
Cement	barrels (376 pounds net) 164,218,941	280,785,583	174,023,051	231,735,676
Clay:				
Products ^m .....	.....	430,428,494	.....	(^m)
Raw ⁿ	short tons.....	3,967,198	14,105,589	3,700,106
Coal:				
Bituminous ⁿ	short tons.....	573,366,985	1,133,412,000	519,804,000
Pennsylvania anthracite	long tons.....	75,390,582	474,164,252	72,011,000
Coke ^o	short tons.....	56,865,537	307,773,402	50,925,000
Diatomite and tripoli	do.....	118,495	1,605,173	26,099
Emery	do.....	386	8,641	506
Feldspar (crude)	long tons.....	209,989	1,607,101	202,497
Fluorspar	short tons.....	128,657	2,341,277	112,546
Fuller's earth	do.....	234,152	3,356,482	264,478
Garnet for abrasive purposes	do.....	6,397	523,875	6,939
Gems and precious stones .....	.....	(^p)	.....	(^p)
Graphite:				
Amorphous	short tons.....	2,975	40,500	2,595

* In this general statement certain of the figures represent shipments rather than quantity mined, and some of the figures for 1927 are estimates.

^b From both domestic and foreign ores.

^c Figures represent antimony content of antimonial lead. Value excluded from metallic total as the value of the antimony is included in the antimonial lead value. Value for antimony other than that in antimonial lead is included in metallic total; Bureau of Mines not at liberty to publish figures.

^d Product from domestic ores only.

^e Value, \$20.871834625323 an ounce.

^f Value not included in total value.

^g Including ore used for fluxing.

^h Figures showing values not available.

ⁱ Figures for 1927 not yet available.

^j Value included in total value of metallic products. Bureau of Mines not at liberty to publish figures.

^k Figures not yet available. Estimate of value included in total value of metallic products.

^l Figures not yet available. Estimate of value included in total value of nonmetallic products.

^m Figures obtained through cooperation with Bureau of the Census. Figures for 1927 not available; estimate of value included in total value of nonmetallic products.

ⁿ Includes brown coal and lignite, and anthracite mined elsewhere than in Pennsylvania.

^o Figures represent Tripoli only. Value of diatomite is included in total value of nonmetallic products; Bureau of Mines not at liberty to publish figures.

^p No canvass. Estimate of value included in total value of nonmetallic products.

MINERAL PRODUCTS OF THE UNITED STATES, 1926-27—Continued

Product	Quantity	1926 Value	Quantity	1927 Value
NONMETALLIC				
Crystalline pounds..	4,989,200	\$ 178,842	5,224,400	\$ 197,121
Grindstones and pulpstones short tons..	38,339	1,873,234	31,931	1,554,750
Gypsum do.....	5,635,441	46,721,219	5,346,888	42,174,454
Lime do.....	4,560,398	41,566,452	4,387,000	38,210,000
Magnesite (expressed as equivalent crude) short tons..	133,500	1,200,830	121,490	1,090,550
Mica:				
Scrap do.....	7,043	136,643	6,280	110,139
Sheet pounds..	2,172,159	400,184	1,512,492	212,482
Millstones do.....		45,937		35,438
Mineral paints:				
Natural pigments ^a short tons..	(a)	(a)	(a)	(a)
Zinc and lead pigments ^a do.....	184,289	25,896,269	191,853	25,275,975
Mineral waters gallons sold..	(p)	(p)	(p)	(p)
Natural gas M cubic feet..	13,019,000	299,238,000	1,370,000,000	298,000,000
Natural-gas gasoline gallons..	1,363,090,000	136,412,000	1,627,600,000	111,100,000
Oilstones, etc. short tons..	1,680	223,359	932	233,080
Peat do.....	61,936	364,413	(p)	(p)
Petroleum barrels (42 gallons)	770,874,000	1,447,760,000	894,435,000	1,203,000,000
Phosphate rock long tons..	3,209,976	10,893,800	3,166,102	11,234,863
Potassium salts short tons..	25,060	1,083,064	49,500	2,448,146
Pumice do.....	53,887	208,504	53,298	221,481
Pyrites long tons..	166,559	616,668	215,786	804,006
Salt short tons..	7,371,600	25,055,012	7,568,690	24,817,962
Sand:				
Glass do.....	2,274,218	8,615,371	2,000,000	8,000,000
Molding, building, etc., and gravel..... do.....	180,826,600	107,723,330	187,000,000	110,000,000
Sand-lime brick ^m thousands..	330,586	3,981,492	(m)	(m)
Silica (quartz) short tons..	27,743	274,333	22,144	194,040
Slate do.....	718,000	12,352,767	692,040	11,380,736
Stones do.....	124,496,360	188,308,590	135,200,000	197,200,000
Sulphur long tons..	2,072,657	37,300,000	2,072,109	38,300,000
Sulphuric acid (60° Baumé) from copper and zinc smelters short tons..	1,068,449	8,274,242	1,041,399	8,240,388
Talc and soapstone ^f do.....	181,568	2,110,994	192,316	2,234,724
Total value of nonmetallic products (approximate)		\$4,802,180,000		\$4,294,000,000
SUMMARY				
Total value of metallic products		1,402,920,000		1,217,000,000
Total value of nonmetallic products (exclusive of mineral fuels)		1,261,200,000		1,210,000,000
Total value of mineral fuels		3,540,980,000		3,084,000,000
Total value of "unspecified" (metallic and non-metallic) products (partly estimated)		7,600,000		9,000,000
Grand total approximate value of mineral products		\$6,212,700,000		\$5,520,000,000

^a Canvass discontinued after 1915. Value of iron ore sold for paint included under last item ("Unspecified").
^m Sublimed blue lead, sublimed white lead, leaded zinc oxide, and zinc oxide.

^f K₂O content.

^f Figures represent talc only. Value of soapstone is included in total value of nonmetallic products; Bureau of Mines not at liberty to publish figures.

^u Includes for 1927 the value of bismuth, cadmium sulphide and other cadmium compounds, chats (\$618,000), columbite (\$378), flint lining for tube mills and pebbles for grinding (\$46,856), iron ore sold for magnets, iron ore sold for paint (\$132,007), lithium minerals (\$59,656), natural magnesium chloride, natural magnesium sulphate, calcareous marl (\$180,166), greensand marl (\$166,998), molybdenum (\$1,858,786), selenium, silica sand, and sandstone (finely ground), sodium salts (carbonate, bicarbonate, sulphate, and trona) from natural sources (\$1,422,234), tellurium, zircon (\$864,600), and an estimate of the value of miscellaneous mineral products, statistics for which are not collected annually by the Bureau of Mines.

of mineral products in 1927 and was due almost entirely to a decrease in the total value of mineral fuels. Of these, the quantity and value of coal decreased; the quantity of petroleum produced changed little, but the value decreased, and the quantity and value of natural gas and natural gasoline increased as compared with 1927. The total value of metallic products showed an increase due to increase in quantity and unit value of copper and an increase in the quantity of iron produced. Decreases were shown for gold, silver, lead, and zinc. The total value of non-metallic mineral products showed approximately no change. Decreases for some of these products were offset by increases for others.

The following figures give the estimated total value of metallic mineral products, non-metallic mineral products other than fuels, and of mineral fuels produced in the United States in 1928:

ESTIMATED VALUE OF MINERAL PRODUCTS OF THE UNITED STATES, 1928

Metallic	\$1,260,000,000
Non-metallic (other than fuels)	1,240,000,000
Mineral fuels	2,900,000,000
Total	\$5,400,000,000

These estimates were subject to revision and replacement by precise figures as soon as the Bureau of Mines could complete the canvass of industries just begun to obtain accurate statistics for the year 1928, based on communications sent to every mining, quarrying, and well operating company, soliciting a report on the output of each mineral commodity by each establishment.

Mineral production in the United States in 1927 suffered a decline as compared with the marked prosperity and the high levels of productivity established in 1925 and the higher

levels maintained in the following year. Statistics for 1927 show a diminished rate of output for most of the products and a general decline in unit value as compared with the previous year. Estimates of the U. S. Bureau of Mines placed the total value of all products at \$5,520,000 in 1927, or 11 per cent less than the corresponding value of \$6,212,700,000 for 1926, and 3 per cent less than that of 1925. The decrease in the mineral fuels groups amounted to about 13 per cent. The production of bituminous and anthracite coal showed a decrease, and their total value decreased in somewhat larger ratio, the industry being marked by depression and an almost total cessation in some fields for part of the year. Petroleum and natural gas, on the other hand, showed an increase in amount, as a result of the development of new pools in Oklahoma and Texas, although there was a marked decline in total value of petroleum produced. The decrease in the value of metals produced was especially marked, particularly in the case of the major metals as iron (both ore and pig), copper, lead, zinc, silver, and gold; the only increase being a moderate one in aluminum. The decline in output was accompanied by a general decline in prices, except for a few minor metals; In the production of lead and zinc only a moderate decrease was reported, in spite of a large drop in price; while mercury and cadmium production reported noteworthy increases. The decline in value of output of the nonmetallic mineral industries, in contrast to the metallic and fuel-producing industries, was moderate, and even here the generally lower prices offset the increase in quantity of output of many of the nonmetallic products. The output of stone (crushed stone), cement, sand and gravel, and asphalt, reflected the demands of the paving and building industries in the gains made, while the output of pigment materials, fuller's earth, potassium salts, common salt and its co-products calcium chloride and bromine, and talc and soapstone, was greater than in 1926. Among the products showing moderate to marked decreases were such important industrial minerals and chemical materials as clay, fluorspar, feldspar, glass sand, lime, magnesite, mica, phosphate rock, and silica. For a detailed discussion of the more important minerals and their production in 1927, see such articles as ALUMINUM, COAL, COPPER, GOLD, IRON, SILVER, etc., also tables, pages 460 to 461.

MINIMUM WAGE. MASSACHUSETTS. During the year 1927, the Massachusetts Minimum Wage Commission promulgated two decrees, one affecting women employed in the jewelry trades and the other for women in toys, games, and sporting goods. With regard to the former: all experienced female workers, with at least six months' experience in the occupation, who were 20 years and over, were to receive a minimum weekly wage rate of \$14.40. The minimum rate for all other women employed in the industry was to be \$12. With regard to workers in toys, games, and sporting goods trades: all experienced females, who had been in the trade for at least one year, and who were 18 years or over, were to receive \$13.50 as a weekly minimum. Learners and apprentices were to receive \$12. All others were to receive at least \$10.50 a week. It is known, of course, that this commission has only the power to recommend and the only weapon it may employ in enforcing its decrees is public

opinion. But the commission has been uniformly successful in enlisting the aid of the public. Whether this is due to the respect it has gained or because the minimum wages set have been very low, it is not possible to say.

In January, the Massachusetts Department of Labor and Industries created a board for the determination of a minimum wage for women employed in the manufacture of electrical supplies and equipment, following a salary investigation made by the minimum wage commission in 1925-26. This industry was the twentieth for which wage boards had been set up.

It is interesting, at this point, to review the history of the Massachusetts law which was passed in July, 1913. As a result of an investigation into the wages of women in laundries, cotton mills, retail stores, etc., there was set up the minimum wage commission of three persons for the purpose of investigating wages of women in industries where it was believed women were receiving below the minimum necessary for subsistence. The commission creates a wage board if it believes that women are being underpaid. On the board are to sit an equal number of representatives of the employers and the workers. Wage agreements, reached by these boards, are sent back to the commission which enters a decree recommending the scale determined upon to all the employers in the State in the particular industry. In 1928 there were in effect wage decrees for 20 industries employing 90,000 women and girls—one-fifth of all those gainfully employed in the State. Minimum wages range from \$13 weekly for workers in candy factories to \$15 for women employed in men's clothing and raincoat factories. The rate for those employed in retail stores is \$14 for girls 19 years old and with a year's experience.

With the entering of a wage decree the commission is compelled to inspect the books of employers to see whether compliance is taking place. In the event that it is not and the employer cannot be induced to accept the wage scale of the decree, the commission by law is required to publish the names of recalcitrant employers. Miss Ethel M. Johnson in discussing this situation in the *Survey* of August 15 reported that wage decrees covering the following industries had been accepted by the majority of the employers: laundries, retail stores, paper-box factories. She went on to say: "The successful enforcement of the law depends upon public opinion, aroused by publicity and education. . . . The direct purpose of the minimum wage law is to protect working women and girls from being exploited by wages inadequate for decent, healthful living. It has resulted in improved wage conditions for many. . . . Through the work of the wage boards, it has helped to bring about better understanding and consequently better relations between employers and employees."

NEW YORK. Late in November, Governor-elect Roosevelt indicated that he was giving considerable study to the enactment of "fair wage" legislation for this State. After conferences with the head of the Consumers League of New York, Mr. Roosevelt announced that he believed that the idea of a fair wage for women might be put into effect without the necessity for resorting to special enactments, the Department of Labor already having sufficient authority. Mr. Roosevelt's statement was as follows:

When the original minimum wage law was declared unconstitutional, there was a dictum which seemed to indicate that the purpose sought could be obtained constitutionally through fair wage legislation. The word "fair" applying, of course, not only to the employee but also to the employer. The labor laws of the State of New York are undoubtedly more advanced and more practical in operation than those of any other State and the principal question at the present time seems to be whether the fair wage objective can be best obtained by constitutional legislation or administrative action by the State Department of Labor under the existing law. The Consumers League and other organizations are now studying this phase of the question and when I get back to New York I hope to confer with the organizations. I am seeking to have the fair wage objective obtained with the least possible trouble.

BIBLIOGRAPHY. While discussion in the United States on this subject was practically at a standstill because of the Supreme Court decision in the District of Columbia case, the same cannot be said for foreign commentators. *A Study of the Minimum Wage* by J. H. Richardson (New York, 1928), for example, is based on the very rich materials collected by the League of Nations' Labor Office. The author's thesis is as follows: There should be set up in each country, or in regions of each country, a minimum wage which will depend upon the capacity of industry to pay. By industry, the author does not mean the individual shop but the industry as a whole and he is quite willing to see the incompetents in a particular process eliminated. Mr. Richardson recognizes the administrative difficulties attending the success of such laws, but he is sanguine that they are not insuperable. He refuses, too, to base the minimum on so-called cost of living scales, but would base it on the prevailing rate being paid to unskilled workers in a particular industry, with the stipulation that as production rises the minimum is to rise as well. The Women's Bureau of the U. S. Department of Labor announced the publication of its bulletin, *The Development of Minimum Wage Laws in the United States*, but it had not issued from the press by the end of the year.

MINING AND METALLURGICAL ENGINEERS, AMERICAN INSTITUTE OF. An organization founded in 1871 and incorporated under the laws of New York State in 1905, "to promote the arts and sciences connected with the economic production of the useful minerals and metals and the welfare of those employed in these industries." It is made up of 27 local sections and has 38 affiliated societies at colleges throughout the country. There are four classes of membership: members, men who have been practicing engineers for at least six years; associates, men interested in or connected with mining, geology, metallurgy, or chemistry, but not practicing engineers; junior associates, students in engineering schools; and honorary members, those elected by unanimous vote of the board of directors. On Jan. 1, 1928, there were 8438 members, distributed as follows: honorary, 19; members, 6469; associates, 950; junior associates, 1004. The income for 1927 was \$188,984.61. In addition to the monthly meetings of the local sections, the annual meeting, a four-day convention, is held on the third Tuesday in February, in New York City, and regional meetings are held in various important mining or metallurgical centres in the United States or abroad. The Institute publishes *Transactions*, an annual containing the best papers of the year on mining

and metallurgical subjects; *Mining and Metallurgy*, a monthly bulletin; the *Year Book* which constitutes a "Who's Who" in the profession; *Technical Publications*, a series of individual technical pamphlets; and special volumes from time to time. In connection with three other societies, the Institute maintains the Engineering Societies Library and an employment bureau. The headquarters are at the Engineering Societies Building, 29 West 39th Street, New York.

MINNEAPOLIS. See MINNESOTA.

MINNEAPOLIS INSTITUTE OF ARTS.

See ART MUSEUMS.

MINNESOTA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,387,125. The estimated population on July 1, 1928, was 2,722,000. The capital is St. Paul.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Corn	1928	4,089,000	143,115,000	\$88,781,000
	1927	4,172,000	127,246,000	81,437,000
	1928	4,256,000	6,558,000 *	62,590,000
Hay	1927	4,338,000	7,906,000 *	63,241,000
	1928	4,089,000	153,338,000	53,668,000
Oats	1927	4,350,000	116,580,000	46,632,000
	1928	1,599,000	23,955,000	22,948,000
Wheat	1927	1,763,000	20,925,000	22,949,000
	1928	2,000,000	60,000,000	30,000,000
Barley	1927	1,460,000	43,800,000	28,470,000
	1928	354,000	38,940,000	11,682,000
Potatoes	1927	328,000	33,128,000	19,877,000
	1928	726,000	5,518,000	11,312,000
Flaxseed	1927	757,000	7,343,000	14,099,000
	1928	402,000	5,950,000	5,058,000
Rye	1927	383,000	7,009,000	5,958,000

* tons.

MINERAL PRODUCTION. The State continued to furnish the greater part of the iron ore produced in the United States and to derive from this item all but a small part of its own total production of minerals. Less iron was mined, however, in 1927 than in either of the two years immediately preceding. There were mined 35,563,177 long tons in 1927 and in 1926, 40,961,361; the total of 1927 had a value of \$87,935,099, and that of 1926 a value of \$103,715,621. The production of pig iron within the State remained relatively small, 287,813 long tons for 1927, as against 292,658 for 1926. Coke production rose slightly at 633,000 short tons (1927) from 619,905 valued at \$6,014,738 in 1926. All was from by-product ovens. Stone was quarried to the quantity of 682,800 short tons in 1926, as against 753,740 in 1925; in value, \$3,746,392 for 1926 and for 1925, \$3,784,252. The clay products attained a total of \$1,852,566 for 1926 and \$1,764,860 for 1925. The yearly total value of the sand and gravel production was around \$2,000,000, as was likewise the output of manganiferous ore. The total value of the State's mineral products, duplications eliminated, was \$118,361,306 for 1926; for 1925, \$110,252,956.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$36,700,222 (of which \$11,099,620 was aid to local education); for interest on debt, \$3,859,640; for permanent improvements, \$12,575,914; total, \$53,135,776 (of which \$15,599,746 was for highways, \$4,871,094 being for maintenance and

\$10,728,652 for construction). Revenues were \$63,766,540. Of this, property and special taxes formed 24.6 per cent, departmental earnings and charges for officials' services 7.9 per cent, and sales of licenses and a tax on gasoline 49.5 per cent. Property valuation was \$2,365,019,180; State taxation thereon, \$10,719,860. Net State funded debt on June 30, 1927, was \$11,715,348. This total did not include road bonds issued by counties, on which the State was obligated to meet charges.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 8826.82. There were built in 1928, 3.53 miles of additional first track and 6.99 miles of second track.

EDUCATION. The elementary school curriculum of the State, according to Commissioner of Education McConnell, writing in the *Journal* of the National Education Association, was revised and enlarged. There were enrolled in the public schools of the State in the academic year 1927-28, 552,794 pupils, of whom 463,288 were in the elementary schools and 89,506 in the high schools. Expenditure for public-school education in that year was \$53,152,364. Teachers' salaries averaged \$1283 a year.

CHARITIES AND CORRECTIONS. Wide powers of central control over State institutions were vested in the State Board of Control as functioning in 1928. Besides controlling the 18 institutions for the various classes of defectives, sick, and delinquents, it supervised certain of the county institutions and operated a number of prison industries, appointed county child welfare boards, exercised legal guardianship over committed children, and established the paternity of illegitimates. The State institutions, with the numbers of inmates on June 30, 1928, were: Asylums and mental hospitals at Anoka, 1029; Hastings, 992; Willmar, 689; Fergus Falls, 1699; Rochester, 1459; St. Peter Hospital, 1524; Asylum for Dangerous Insane, 152; School for Feeble-Minded, 1979; Home School for Girls, 266; Colony for Epileptics, 167; State Training School, 328; Reformatory, 843; Reformatory for Women, 77; State Prison, 1228; Hospital for Inebriates, 14; School for the Blind, 88; School for the Deaf, 270; State Public School, 417; Sanatorium for Consumptives, 216; Hospital for Crippled Children, 250.

POLITICAL AND OTHER EVENTS. An independent audit of the books of the State, authorized by the legislature in 1927, resulted in a report, published in March, 1928, finding lack of co-operation between the State auditor's office and the Department of Administration and Finance. Definition of responsibilities and modernization of accounting methods were recommended. There followed in July a decision of the State Supreme court adverse to the Department of Administration and Finance, denying its authority as superior over that of the regents in the affairs of the University of Minnesota. The decision was regarded as a reverse for the plans of Governor Christianson for centralizing authority. Numerous ore leases of lands of the university, executed by authority of the State Department of Administration and Finance, were rendered of doubtful validity by the decision. The State trunk highway system as described in constitutional amendments was declared in a decision of the State supreme court not to include streets of first class cities, which consequently could not

benefit from State funds for such highways. Proceedings were brought by the State attorney-general against conductors of greyhound races operating in Minnesota.

As in the case of Michigan, sentencing judges in Minnesota inclined to impose sentences less severe than those provided by the Legislature of 1927 for repeating criminal offenders, and many convicts were brought back from prison for resentence. A report issued in March by the State railroad and warehouse commission, covering motor-bus operations in 1927, indicated to what extent motor-bus transportation had grown. It showed that motor buses had traveled 16,283,126 miles in the year, carrying 12,351,612 passengers, and had made a gross revenue of \$4,731,386. The chief company, the Northland Transportation Company, a subsidiary of the Great Northern Railroad, furnished nearly half the totals of mileage and of revenue. The name of the Minnesota National Forest was changed to Chipewewa National Forest. The Northern States Power Company completed in July a 30,000 horsepower hydro-electric generating station at Chipewewa Falls. The development of power dams along the watercourses forming part of the boundary between Minnesota and Ontario led to continued legal difficulties and political dispute. Governor Christianson in March declared himself opposed to the construction of new dams by private interests. While projects relating to these waters went to the Federal Power Commission for approval, the State Government prepared an engineers' report on the subject to lay before that body.

The City Comptroller of St. Paul made a special report March 22 on the financial condition of the city, prompted by a legal opinion of bankers' counsel that the city had exceeded its bonded debt limit; he stated that the bonded debt was \$19,982,438, and was about \$7,000,000 below the legal limit. A charter amendment submitted by the St. Paul charter commission, to empower the city government to buy, own, and operate street car and motor-bus lines, was submitted to a popular referendum vote on May 1. It was defeated by a small margin. Laurence C. Hodgson was reelected mayor of the city on the same date.

Litigation to determine the debt margin of the city of Minneapolis was decided by the State supreme court June 1 in the city's favor, the decision sustaining the city's contention that certain bonds were exempt from the legal limitation. It resulted that the city had a debt margin of \$1,733,000, and that it could proceed with a number of projects involving debt increase. Proposed charter amendments to provide restricting of the city and centralized control of ward funds for street maintenance were defeated by popular vote June 18. A reorganization of the Southern Minnesota Joint Stock Land Bank was completed March 30.

ELECTIONS. While the greater part of what had been the Progressive vote of 1924 in the State went on November 6 to the Democratic National ticket, the vote for the Republican National candidates, Hoover and Curtis, was the greater by an ample majority. The State's presidential vote was: Hoover (Rep.), 560,977; Smith (Dem.), 396,451. Theodore Christianson, Republican, was reelected Governor. Henrik Shipstead, the only Farmer-Labor member of the United States Senate, was reelected by what was de-

scribed as the largest majority ever polled in the State. He obtained 665,169 votes; his opponent, 342,992. His success was the more remarkable for his being opposed by a nominee of the otherwise successful Republican party, Arthur E. Nelson. Republican candidates were successful in the election of United State Representatives. A constitutional amendment to require the diversion of one-third of the State gasoline tax receipts to the State highway and bridge fund was approved by popular referendum. The voters of the city of St. Paul approved the issue of \$7,577,000 for public improvements, including the completion of the municipal airport.

OFFICERS. Governor, Theodore Christianson; Lieutenant-Governor, W. I. Nolan; Secretary of State, Mike Holm; State Treasurer, Julius A. Schmahl; Auditor, Ray P. Chase; Attorney-General, Albert F. Pratt; Commissioner of Education, James M. McConnell.

JUDICIARY. Supreme Court: Chief Justice. Samuel B. Wilson; Associate Justices: Homer B. Dibel, Andrew Holt, Clifford L. Hilton, Royal A. Stone.

MINNESOTA, UNIVERSITY OF. A coeducational State institution for higher learning at Minneapolis, Minn., founded in 1851. The 1928 autumn registration was 11,815, and there were, in addition, 6041 in the summer session. The university staff on a full-time basis, including professors, associate professors, assistant professors, and instructors, numbered 657. The endowment amounted to \$9,245,417, including a permanent fund of \$3,914,887, and lands and buildings in trust, \$1,590,837. Income from these funds, together with that of service enterprises and revolving funds and intercollegiate athletics, amounted to \$2,908,606; while student fees and miscellaneous income amounted to \$1,686,862; State appropriations for maintenance, building, and special purposes for 1927-28 were \$4,637,902, and Federal aid, \$293,634. The library contained 525,000 volumes. Minnesota Hospital and Home for Crippled Children, constructed at a cost of \$851,000, was dedicated on November 10, by Wm. H. Eustis, who had contributed \$350,000 toward its construction; construction was begun on the Memorial Auditorium, to cost \$1,000,000, and for which \$800,000 was available; and contracts were to be let for the construction of university dormitories at a cost of \$250,000. President of the University, Lotus Delta Coffman, Ph.D., LL.D.

MIRON, SALVADOR DIÁZ, Mexican poet, died at Vera Cruz, Mex., June 12, at the age of seventy-three. He was born at Vera Cruz. Miron was considered by many critics the leading poet of Mexico, and some writers rated him as the greatest in the Spanish-speaking countries and compared him with the late Jean Richepin, of France. He wrote with meticulous care and left only one authorized work, *Lascas*. His poetry is distinguished by elegance of diction and great refinement of thought. He was an accomplished orator and took part in politics as a member of the Chamber of Deputies and a leader of revolutionary movements. He was also esteemed as a critic and philosopher and was deeply interested in mathematics and geography.

MISSISSIPPI. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 1,790,618. Owing to a de-

crease between 1910 and 1920 no later estimates have been made. Capital, Jackson.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Cotton	1928	8,994,000	1,470,000 ^a	\$135,975,000
	1927	3,340,000	1,355,000 ^a	138,888,000
Corn	1928	1,765,000	22,945,000	23,404,000
	1927	1,918,000	34,140,000	31,750,000
Hay	1928	486,000	601,000 ^b	8,995,000
	1927	526,000	631,000 ^b	9,328,000
Potatoes	1928	15,000	1,330,000	1,596,000
	1927	12,000	936,000	1,544,000
Sweet potatoes	1928	55,000	6,050,000	5,445,000
	1927	69,000	7,728,000	6,182,000

^a bales, ^b tons.

MINERAL PRODUCTION. The total value of the State's mineral products was \$1,882,986 for 1926; for 1925, \$2,171,945. Clay products furnished \$1,006,661 of the 1926 total and \$1,050,241 of that of 1925. The remainder was made up chiefly of sand and gravel, of which the 1926 output was \$871,638, and the 1925 production \$1,120,709. Mineral waters and stone were produced in minor amounts.

FINANCE. State expenditures in the year ended Sept. 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$12,233,817 (of which \$3,988,337 was aid to local education); for interest on debt, \$790,168; for permanent improvements, \$5,557,599; total, \$18,581,584 (of which \$5,637,927 was for highways, \$1,692,015 being for maintenance and \$3,945,912 for construction). Revenues were \$16,394,641. Of this, property and special taxes formed 40.7 per cent; departmental earnings and charges for officials' services, 9.4 per cent; sales of licenses and a tax on gasoline, 27.6 per cent. Property valuation was \$724,107,850; State taxation thereon, \$4,344,647. Net funded State debt on June 30, 1927, was \$17,142,853.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 4265.87. There was no additional building of railroads in 1928.

EDUCATION. The Legislature of 1928, in increasing the State equalization fund disbursement by \$1,000,000, did much toward remedying the inequality of educational opportunity in different sections. An eight-month minimum school term was provided. The school-age population of the academic year 1927-28 was placed at 848,509. There were enrolled 577,834 public-school pupils, of whom 530,451 were in elementary schools and 47,382 in high schools. Current expenditures of public schools were about \$15,000,000.

CHARITIES AND CORRECTIONS. The State had no single central agency for institution control. Institutions were under separate boards of trustees. State institutions were: Beauvoir Soldiers' Home, Gulfport; State Insane Hospital, Jackson; East Mississippi Insane Hospital, Meridian; State Charity Hospital, Jackson; South Mississippi Charity Hospital, Laurel; Vicksburg Charity Hospital, Vicksburg; State Charity Hospital, Natchez; Mattie Hersee Hospital, Meridian; Colony for the Feeble-Minded, Ellisville; Deaf and Dumb Institute, Jackson; Blind Institute, Jackson. Patients in State insane hospitals on Jan. 1, 1928, numbered 2990.

LEGISLATION. The State Legislature convened in regular biennial session January 3, and adjourned April 27 after a session marked by much conflict of views. Appropriations were passed to a total expected to exceed \$26,000,000 for the biennium, but failure to adopt a consistent revenue programme left the State government with only about \$10,000,000 of revenue in sight for the period. The Senate rejected a general 1 per cent sales tax and an increase of 6 mills in the ad valorem levy, while Governor Bilbo refused his approval to a tobacco tax. A measure to resume the \$1 a day pension of Confederate veterans, which had been interrupted, and graduated pensions to veterans' widows, was passed, with an accompanying 2-mill ad valorem tax. The Governor vetoed a \$4,000,000 measure for flood relief in the form of an appropriation to the delta rehabilitation commission. A law was enacted bringing Mississippi into conformity with the 21 other States granting reciprocal exemption from death taxes; it was made retroactively retroactive to July 1, 1925. A project of Governor Bilbo to create a State printing plant for the production of school textbooks was defeated. Appropriations of \$1,700,000 for permanent improvements at the University of Mississippi and of \$3,475,000 for 17 other State institutions were made.

POLITICAL AND OTHER EVENTS. Investigation of the disposal of patronage in the postal service, conducted by Republican organization leaders in the State, led to the indictment of E. L. Patton, a colored Republican of Jackson, July 14, on charges involving the purchase and sale of public office. Plans of the Harrison and Jackson county supervisors for a bridge between Biloxi and Ocean Springs were approved in January by the U. S. War Department. Forrest County entered upon a large programme of road construction, the voters approving a county bond issue of \$1,000,000 for paving, at an election on July 3. A sea wall extending from Henderson Point to the eastern border of Biloxi was completed in May, at a cost of \$3,475,000. The increase in dairy farming in the State was visible in the coming of several large dairy and cheese companies into the State.

ELECTION. The State was one of the six of the Southern group that remained in the Democratic column at the National election of November 6. The majority for the Democratic presidential candidate, Governor Smith, was somewhat less than had been that for Davis in 1924. H. D. Stephens, Democrat, was reelected to the United States Senate and eight Democrats were elected to the House of Representatives, of whom six were reelected. The presidential vote of the State was reported as: Smith (Dem.), 124,539; Hoover (Rep.), 26,889.

OFFICERS (inaugurated Jan. 16-17, 1928): Governor, Theo. G. Bilbo; Lieutenant-Governor, Bidwell Adam; Secretary of State, Walker Wood; Attorney-General, Rush H. Knox; Treasurer, Webb Walley; Auditor, C. C. White; Superintendent of Education, W. F. Bond.

JUDICIARY. Supreme Court: Chief Justice, Sydney Smith; Associate Justices: W. D. Anderson, James G. McGowan, George H. Ethridge, John B. Holden, and W. H. Cook.

MISSISSIPPI, UNIVERSITY OF. A coeducational, State institution of higher education at University, Miss., founded in 1848. The total enrollment for the autumn of 1928 was 1121;

for the summer session of 1928, the enrollment was 309. The University consisted of the following colleges and schools: College of liberal arts, school of law, school of engineering, school of medicine, school of pharmacy, and school of commerce and business administration. There was also a school of education, the students of which, however, counted their education courses toward a degree in one of the other schools. The faculty numbered 64, exclusive of fellows and student assistants. There were approximately 40,000 volumes in the library. The productive funds amounted to \$190,000 from State appropriation; \$98,000 from student fees; and \$52,000 from other sources. A special appropriation of \$1,600,000 was made by the 1928 legislature for the construction of new buildings and other permanent improvements. Chancellor, Alfred Hume, C.E., D.Sc.

MISSISSIPPI RIVER FLOOD CONTROL. See FLOODS.

MISSOURI. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 3,404,055. The estimated population on July 1, 1928, was 3,523,000. The capital is Jefferson City.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Corn	1928	6,260,000	181,540,000	\$132,524,000
	1927	5,796,000	168,084	126,063
Hay	1928	3,442,000	4,340,000	45,360,000
	1927	3,683,000	5,373,000	52,559,000
Wheat	1928	1,511,000	19,194,000	23,188,000
	1927	1,568,000	15,700,000	19,146,000
Oats	1928	1,606,000	44,968,000	18,887,000
	1927	1,565,000	26,605,000	12,504,000
Cotton	1928	349,000	146,000	13,140,000
	1927	291,000	115,000	11,778,000
Potatoes	1928	85,000	10,285,000	6,171,000
	1927	68,000	5,644,000	6,491,000
Sweet potatoes	1928	11,000	1,155,000	1,213,000
	1927	12,000	1,344,000	1,613,000

^a tons, ^b bales.

MINERAL PRODUCTION. Lead, of which the State was the greatest producer in the Union, contributed more than one-third of the entire value of the mineral output of the State for 1926. A decline in 1927 brought the total lead production of Missouri down to 198,760 short tons for that year, from 207,012 for 1926; in value, the product was \$25,043,760 for 1927 and for 1926, \$33,121,920. There were produced 6,778,384 barrels of cement in 1927, as against 7,653,111 in 1926. Cement shipments of 1927 had a value of \$11,117,047; those of 1926, \$12,917,342. There were mined in 1927, 3,064,343 tons of coal; in 1926, 3,008,495 tons. Coal mined had a value of \$8,698,000 for 1927, and for 1926, \$8,951,000. In addition to lead, the ores mined in the State produced considerable zinc and some silver and copper. The zinc production was, for 1927, 18,737 short tons; for 1926, 26,018 short tons. The value of zinc produced was: for 1927, \$2,398,336; for 1926, \$3,902,700. Clay products were valued at \$17,618,931 for 1926, the latest recorded year, and at \$17,521,866 for 1925. In 1927 were produced 274,000 tons of lime, as against 263,467 in 1926; in value, \$2,295,000 (estimated) for 1927 and \$2,218,943 for 1926. There was a large production of stone; in 1926, 3,093,000 tons and in 1925, 2,796,510; in value, \$6,012,013 for 1926 and \$5,662,835 for 1925. Barite was produced in

1926 to the value of \$946,595. The total value of the State's mineral products, duplications excluded, was \$90,003,537 for 1926; for 1925, \$92,548,473.

FINANCE. State expenditures in the year ended Dec. 31, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$23,892,125 (of which \$5,497,348 was for local education); for interest on debt, \$3,297,765; for permanent improvements, \$19,601,528; total, \$46,791,418 (of which \$19,994,908 was for highways, \$1,411,950 being for maintenance and \$18,582,958 for construction). Revenue was \$42,771,958. Of this, property and special taxes formed 32.1 per cent; departmental earnings and charges for services of State officers, 15.4 per cent; sales of licenses and taxation of gasoline, 41.1 per cent. Assessed valuation of property was \$4,967,319,670; State taxation thereon, \$6,457,516. Net funded State debt on Dec. 31, 1927, was \$69,958,464. Of outstanding bonds \$50,000,000 were for highways.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 8017.60. There were built in 1928, 19.16 miles of second track and 0.2 mile of third track.

EDUCATION. The five State teachers' colleges were accredited in 1928 as standard four-year colleges by the American Association of Colleges and Universities. The school-age population of the State in the academic year 1927-28 was placed at 918,400. There were enrolled in the public schools 672,790 pupils. Of these, 205,770 were in rural schools, 342,287 in elementary schools within high-school districts, and 124,733 in high schools. Public-school expenditures of the year totaled \$52,495,170.14, including \$13,065,083.03 for building. Teachers' salaries averaged, for men, \$667, and for women, \$611 a year, in rural districts; in other districts, \$1419 for men and \$894 for women.

CHARITIES AND CORRECTIONS. The institutions of the State include four State hospitals, the Missouri Colony for the Feeble-Minded and Epileptic, Missouri State Sanatorium, Confederate Home, State Federal Soldiers' Home, State Penitentiary, Reformatory, Industrial Home for Girls, Industrial Home for Negro Girls. Prisoners in the State Penitentiary on Jan. 1, 1928, numbered 3624, and formed 103 to the 100,000 of the population.

POLITICAL AND OTHER EVENTS. A Missouri statute of 1919, rendering directors of any State bank personally liable for losses resulting from the non-payment of deposits made in such bank after it had ceased to be solvent, was sustained March 17, by the State supreme court in a decision in favor of a depositor. The law resembled that of Kansas, sustained by the U. S. Supreme Court in May. The Missouri Supreme Court in July forfeited the charter of one of the dog racing associations that had roused opposition in several States as gambling organizations. The renewal of the wage contest in the Missouri coal fields in the spring was followed by some violence, particularly the ambushing of a group of non-union miners of the Western Coal and Mining Company near Minden June 29. An Appellate Court decision of May 1, was adverse to the custom of members of the Justice Court in Jackson County, who had deserted the districts in which they were supposed to hold court, and had established offices in the Kansas City business dis-

tricts; it was held that these so-called jack-rabbit justices had thus ceased to furnish service to their localities and had in part duplicated the functions of the county courts. State Attorney-General North Todd Gentry was appointed to the State Supreme Court bench June 21, succeeding Walter W. Graves, deceased, and was himself succeeded as Attorney-General by Stratton Shar-tel.

The investigation of the Federal Trade Commission into propaganda of large public utility companies (see UNITED STATES: *Administration*) elicited evidence that 690 public high schools in Missouri had been induced to make use of booklets issued by a power publicity organization. As a means to advance a State highway building programme involving the construction of some 7640 miles of roads, an initiative petition was circulated early in the year, proposing a constitutional amendment to authorize the issue of \$75,000,000 of State bonds. The proposal was to come before the voters at the general election in November. A State park in the Ozark region, the Sam A. Baker State Park, was dedicated July 16. At Louisiana, Mo., a steel highway bridge across the Mississippi River was opened June 9.

At St. Louis a great public building, the Civil Court House, facing the Memorial Plaza, was brought to completion early in the year. Voters of St. Louis County on June 26 approved by a slight margin over the necessary two-thirds majority a proposal to issue \$10,000,000 of bonds for road purposes. On the proposal to improve Lambert Field as a municipal airport at a cost of \$2,000,000 to be met by bond issue, a popular vote was held in the city of St. Louis August 7, and resulted favorably. The city board of aldermen granted the Illinois Traction system, July 13, a franchise to transport freight through city streets for 50 years, in connection with the system's proposal to build a \$5,000,000 terminal with subway and elevated connections on High Street between Morgan Street and Lucas Avenue. The aldermen by ordinance of June 26 sought to provide for the municipal licensing and regulation of all service cars, including compulsory liability insurance.

The tax imposed by Kansas City, Mo., on cigarettes sold within the city limits was upheld by the State Supreme Court April 9. A set of twelve separate proposals for city and county bond issues came to a popular vote May 8; all were defeated save four. Those which passed were issues for a municipal wharf, for improvements to Swope Park, for the County Hospital and for the county highway system. Defeated proposals for trafficways, waterworks, and an airport were again submitted to popular vote on August 7. A water tunnel under the Missouri River to deliver water to the city was completed in April. A natural gas franchise granted to the Industrial Gas Company in 1927 was accepted by that company in March, but was contested by the Doherty interests, already established there as in certain other Missouri and Kansas cities.

ELECTION. The Republican National candidates, Hoover and Curtis, carried the State at the election of November 6 receiving 834,080 votes. Smith and Robinson, on the Democratic ticket, obtained 602,532, their total being of about the size obtained by Coolidge in 1924. As in most other States, the aggregate number of ballots cast far exceeded all previous record. The

vote was locally divided, the city of St. Louis giving Smith a plurality reported at 14,514, while the greater part of the rural districts favored Hoover. The outgoing United States Senator, James A. Reed, Democrat, having declined to run again, Charles M. Hay became the Democratic candidate. He was defeated by Roscoe C. Patterson, Republican, of Kansas City. The Republicans increased by five the number of their seats in the State's delegation of Representatives. For Governor, Henry S. Caulfield, Republican, defeated Francis M. Wilson, Democrat, and Republicans were elected to the majority of the State offices. A proposed constitutional amendment to authorize the issue of \$75,000,000 of highway bonds was approved by popular vote. A proposal to provide higher salaries for legislators was defeated at this election.

OFFICERS. Governor, Sam A. Baker; Lieutenant-Governor, Phil A. Bennett; Secretary of State, Charles U. Becker; Auditor, L. D. Thompson; Treasurer, C. Eugene Stephens; Attorney-General, North T. Gentry (succeeded June 21, by Stratton Shartel); Superintendent of Public Schools, Charles A. Lee.

JUDICIARY. Supreme Court: Chief Justice, John Turner White; Associate Justices: North Todd Gentry, who on June 21 succeeded Walter W. Graves (who died); Frank E. Atwood, Ernest S. Gantt, William S. Ragland, Robert F. Walker, David E. Blair.

MISSOURI, UNIVERSITY OF. A State institution of higher education at Columbia and Rolla, Mo., founded in 1830. The enrollment for the first semester of 1928-29 at Columbia and Rolla was 4439, of whom 3116 were men and 1323 women. This enrollment was distributed as follows: Agriculture, 292; arts and science, 1176; business and public administration, 192; education, 397; engineering, 429; mines, 495; fine arts, 128; graduate, 298; journalism, 307; law, 148; medicine, 79; short course in agriculture, 35. The total enrollment for the summer session was 2169, of whom 929 were men and 1240 women. The total annual enrollment of all classes of students, including those in correspondence and extension courses, was more than 8500. There were 400 members on the faculty. The endowment of the University was approximately \$2,500,000, and the total income from all sources a little over \$3,500,000. The libraries contained approximately 326,000 volumes. President, Stratton Duluth Brooks, LL.D.

MODERATION LEAGUE. See **PROHIBITION.**

MOLLUSCA. See **ZOOLOGY.**

MONACO, mōn'a-kō. A principality on the Mediterranean coast, surrounded on the land sides by the French Department of Alps Maritimes. Area, eight square miles: population, according to the census of 1923, 22,153. It is chiefly known for its gambling resort, Monte Carlo (population in 1923, 9428). Other towns are Monaco (2020) and La Condamine (10,705). Under the constitution of Jan. 7, 1911, the Government consists of the prince assisted by a council of state and a National Council elected by universal suffrage. The ruler in 1928 was Prince Louis II, born July 12, 1870, who succeeded his father, Prince Albert, June 26, 1922.

A tempest in a teapot was brewed in this small principality in the last month of the year. The National Council of 24 members resigned on December 15 and the Communal Council re-

signed on December 26, thus leaving the people of the country without any representatives. The trouble started because the councils felt that the directors of the Monte Carlo Casino were assuming too much control over the affairs of state. Prince Louis, the reigning sovereign, was securely resting in his château in France and conducted all negotiations through his son Prince Pierre. A committee of six, three from each council, was appointed near the close of the year to iron out the difficulties. The question of what control and influence the gambling syndicate should have over the tiny country was thus postponed until the close of the winter season.

MOND CONFERENCES. See **GREAT BRITAIN**, under *History*.

MONEY. The table on page 469 from the annual report of the director of the United States Mint shows the distribution of the stock of money in the United States on June 30, 1927, Oct. 31, 1920, June 30, 1914, and Jan. 1, 1879.

MONEY RATES. See **FINANCIAL REVIEW.**

MONGOLIA. A vast and indefinite tract of territory lying to the west of Manchuria. Area, about 1,875,000 square miles, although some authorities place it as low as 1,367,000 square miles. Population, variously estimated at 750,000 to 2,000,000. Capital and chief town, Urga. It is inhabited by nomadic Mongol and Kalmuk tribes, but latterly the Chinese have immigrated in considerable numbers. The chief occupation is stock raising and the principal exports are furs, skins, hides, horns, and wool. The soil is naturally fertile but needs irrigation to be productive. Gold, iron, copper, silver, and tin are found, but are not worked extensively. Since 1917 there has been a motor-car freight service across the Gobi Desert. The trip takes three days and is only feasible in the summer.

MONGOLISM. See **MENTAL DEFECTIVES.**

MONMOUTH, BATTLE OF. See **CELEBRATIONS.**

MONOPLANES. See **AERONAUTICS.**

MONROE DOCTRINE. See **LEAGUE OF NATIONS.**

MONTAGUE, CHARLES EDWARD. English author and editor, died at Manchester, England, May 28. He was born Jan. 1, 1867. He was educated at the City of London School and at Balliol College, Oxford. Immediately after leaving the university, in 1890, Mr. Montague accepted a post with the Manchester *Guardian*, and by 1896 he had risen to become chief leader writer. He remained with the newspaper until 1925, when he retired to devote his entire time to the writing of novels. In the meantime, 1915-19, he had served with great bravery in the War, being mentioned in dispatches three times. He was wounded and thereafter served as a staff officer and press censor. His first book, *A Hind Let Loose* (1910), is a political and social fantasy, as is his last book, *Right Off the Map* (1927). He published also *Dramatic Values* (1911), a volume of theatrical criticisms; *The Morning's War* (1913); *Disenchantment* (1922); *Fiery Particles* (1923); *The Right Place* (1924); and *Rough Justice* (1926).

MONTANA. **POPULATION.** According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 548,889. The capital is Helena.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

LOCATION, OWNERSHIP, AND PER CAPITA CIRCULATION OF UNITED STATES MONEY, JUNE 30, 1928
[From the Report of the Director of the Mint]

MONEY

469

MONEY

Kind of money	Total amount ^a	Total	Money held in the Treasury		Money outside of the Treasury					
			Amount held in trust against gold and silver certificates (and Treasury notes of 1890)	Reserve against United States notes (and Treasury notes of 1890)	Held for Federal reserve banks and agents	All other money	Total	Held by Federal reserve banks and agents ^b	In circulation	
Gold coin and bullion ..	\$4,109,162,895	\$3,215,615,889	\$1,513,730,839	\$156,039,088	\$1,387,650,413	\$153,195,549	\$893,547,006	\$516,519,318	\$377,027,688	\$3.19
Gold certificates ..	1,513,730,839	1,513,730,839	1,513,730,839	1,513,730,839	1,513,730,839	1,513,730,839	1,513,730,839	494,582,280	1,019,148,559	8.61
Standard silver dollars ..	539,961,701	480,253,232	473,030,801	59,703,469	7,227,931	7,227,931	59,703,469	13,481,924	46,221,545	.39
Silver certificates ..	471,726,701	471,726,701	471,726,701	471,726,701	471,726,701	471,726,701	471,726,701	87,150,089	384,576,612	3.25
Treasury notes of 1890 ..	1,303,600	1,303,600	1,303,600	1,303,600	1,303,600	1,303,600	1,303,600	1,303,600	1,303,600	.01
Subsidiary silver ..	299,010,231	269,164,643	269,164,643	2,845,028	2,845,028	2,845,028	2,845,028	18,143,494	278,175,094	2.35
Minor coin ..	116,688,811	116,688,811	116,688,811	3,021,104	3,021,104	3,021,104	3,021,104	111,061,031	111,061,031	.94
United States notes ..	846,631,016	846,631,016	846,631,016	1,590,525	1,590,525	1,590,525	1,590,525	45,321,560	298,438,352	2.52
Federal reserve notes ..	2,002,810,830	2,002,810,830	2,002,810,830	1,01,210	1,01,210	1,01,210	1,01,210	374,787,433	1,626,432,872	13.74
Federal reserve bank notes ..	4,154,618	4,154,618	4,154,618	19,526,096	19,526,096	19,526,096	19,526,096	29,832,636	4,028,984	.03
National bank notes	699,620,652	699,620,652	699,620,652	1,387,650,413	1,387,650,413	1,387,650,413	1,387,650,413	29,832,636	650,211,920	5.49
Total June 30, 1928	8,118,090,754	3,725,649,727	1,986,761,140	156,039,088	1,387,650,413	195,199,086	6,379,202,167	1,582,575,910	4,796,726,257	40.52
Comparative totals:										
June 30, 1927 ^a	8,531,787,157	4,156,170,267	2,096,205,453	155,420,721	1,712,002,936	192,541,157	6,471,822,343	1,727,532,925	4,744,289,418	40.57
October 31, 1920 ^a	8,476,904,551	2,407,741,919	696,854,226	152,979,026	1,206,341,990	351,566,077	6,766,017,458	1,005,063,805	5,760,953,653	53.60
June 30, 1914 ^a	3,796,456,764	1,845,575,888	1,507,178,879	150,000,000	188,397,009	188,397,009	3,458,059,755	.....	3,458,059,755	34.92
January 1, 1879	1,007,084,483	212,420,402	21,602,640	100,000,000	.....	90,817,762	816,266,721	.....	816,266,721	16.92

^a Includes United States paper currency in circulation in foreign countries and the amount held by the Cuban agency of the Federal Reserve Bank at Atlanta.
^b Includes money held by the Cuban agency of the Federal Reserve Bank of Atlanta.
^c Population of continental United States (estimated) June 30, 1928, 118,364,000; June 30, 1927, 116,943,000; Oct. 31, 1920, 107,491,000; June 30, 1914, 99,027,000;
Jan. 1, 1879, 48,231,000.
^d Does not include gold bullion or foreign coin other than that held by the Treasury, Federal reserve banks, and Federal reserve agents. Gold held by Federal reserve banks under earmark for foreign account is excluded, and gold held abroad for Federal reserve banks is included.
^e These amounts are not included in the total since the money held in trust against gold and silver certificates and Treasury notes of 1890 is included under gold coin and bullion and standard silver dollars, respectively.
^f The amount of money held in trust against gold and silver certificates and Treasury notes of 1890 should be deducted from this total before combining it with total money outside of the Treasury to arrive at the stock of money in the United States.
^g This total includes \$20,404,511 of notes in process of redemption, \$149,700,062 of gold deposited for redemption of Federal reserve notes, \$5,362,953 deposited for redemption of National bank notes, \$2430 deposited for retirement of additional circulation (Act of May 30, 1908), and \$6,444,671 deposited as a reserve against postal savings deposits.
^h Revised figures.

ⁱ Gold certificates are secured dollar for dollar by gold held in the Treasury for their redemption; silver certificates are secured dollar for dollar by standard silver dollars held in the Treasury for their redemption; United States notes are secured by a gold reserve of \$156,039,088 held in the Treasury. This reserve fund may also be used for the redemption of Treasury notes of 1890, which are also secured dollar for dollar by standard silver dollars held in the Treasury. Federal reserve notes are obligations of the United States and a first lien on all the assets of the issuing Federal reserve bank. Federal reserve notes are secured by the deposit with Federal reserve agents of a like amount of gold or of gold and such discounted or purchased paper as is eligible under the terms of the Federal reserve act. Federal reserve banks must maintain a gold reserve of at least 40 per cent, including the gold redemption fund which must be deposited with the United States Treasurer, against Federal reserve notes in actual circulation. Lawful money has been deposited with the Treasurer of the United States for retirement of all outstanding Federal reserve bank notes. National bank notes are secured by United States bonds except where lawful money has been deposited with the Treasurer of the United States for their retirement. A 5 per cent fund is also maintained in lawful money with the Treasurer of the United States for the redemption of national bank notes secured by Government bonds.

Crop	Year	Acres	Prod. bu.	Value
Wheat	1928	4,235,000	77,218,000	\$64,378,000
	1927	3,850,000	80,208,000	77,089,000
Hay	1928	1,900,000	3,103,000 ^a	27,126,000
	1927	2,139,000	3,701,000 ^a	30,192,000
Oats	1928	554,000	20,221,000	8,291,000
	1927	596,000	23,840,000	10,490,000
Flaxseed	1928	196,000	1,666,000	3,199,000
	1927	170,000	1,734,000	3,034,000
Barley	1928	209,000	6,374,000	3,569,000
	1927	195,000	6,435,000	3,861,000
Potatoes	1928	37,000	4,255,000	2,340,000
	1927	36,000	4,860,000	3,159,000
Corn	1928	274,000	5,206,000	4,269,000
	1927	305,000	7,168,000	5,161,000
Dry beans	1928	43,000	624,000	2,402,000
	1927	32,000	640,000	1,920,000
Rye	1928	154,000	2,156,000	1,488,000
	1927	134,000	2,412,000	1,761,000

^a tons.

MINERAL PRODUCTION. In the mining of copper, which yields not far from half of the yearly mineral total of the State, as to value, Montana in 1927 as in 1926 held third place among the States, being outdone by Arizona and Utah. The Montana production of copper fell again in 1927, to 223,492,639 pounds, from 255,372,862 pounds in 1926. About 99 per cent of the 1927 output came from Silver Bow County. The production of zinc, on the other hand, increased. It was 160,461,803 pounds for 1927, as against 147,401,507 pounds for 1926. Lead production decreased to 35,898,315 pounds for 1927, from 42,306,193 for 1926. Gold output was 53,541 fine ounces for 1927, as against 60,504 for 1926. The amount of silver produced in 1927 was 11,200,007 fine ounces; in 1926, 12,769,092. The combined total value of the year's production of these five metals was, for 1927, \$49,265,925; for 1926, \$59,410,453. Coal mines of the State somewhat increased production to 2,966,638 net tons for 1927, from 2,797,760 for 1926; in value, to \$6,973,000 for 1927, from \$6,883,000 for 1926. The amount of petroleum produced in 1927 was 5,048,000 barrels, that in 1926, 7,727,000; the total value was, for 1927, \$7,400,000 (estimated) and for 1926, \$10,170,000. Manganese ore production for 1926 decreased to 23,607 short tons for 1926, from 76,188 for 1925. Among the less important minerals arsenious oxide, natural gas, and stone were produced in 1926 in quantities not greatly changed. The total value of the State's mineral products was \$79,762,630 for 1926; for 1925, \$79,261,284.

The estimated 1928 production of gold attained a value of \$1,296,000; that of silver was 10,726,000 ounces, in value, \$6,275,000; copper, 248,571,000 pounds, \$36,291,000; lead, 32,662,000 pounds, \$1,993,000; zinc, 170,000,000 pounds, \$10,200,000. The 1928 production of all five metals was, in value, about \$56,055,000.

FINANCE. State expenditures in the year ending June 30, 1927, as reported by the U. S. Department of Commerce, were: for departmental maintenance and operation, \$5,927,691 (of which \$1,318,661 was for local education); for interest on debt, \$427,971; for permanent improvements, \$1,840,264; total, \$8,195,926 (of which \$1,535,279 was for highways, \$281,646 being for maintenance and \$1,253,633 for construction). Revenues were \$8,779,813. Of this, property and special taxes formed 29.3 per cent; departmental earnings and charges for officials' services, 7.3 per cent; sale of licenses and taxes on gasoline, 25.9 per cent. Property valuation was \$435,510,159; taxation thereon by the State, \$1,946,-

032. Net funded State debt on June 30, 1927, was \$4,751,148, or \$6.74 per capita. In 1926 the per capita debt was \$7.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 5094.43. There were built in 1928, 163.04 miles of additional first track.

EDUCATION. The State distribution to needy school districts in 1928, as given by State Superintendent Trumper in the *Journal* of the National Educational Association, was over \$350,000, and rendered possible the general establishment of a nine-month term. The school-age population of the academic year 1927-28 was placed at 152,383 (from 6 to 21 years of age). There were enrolled in public schools 117,972 pupils, of whom 95,740 were in elementary and 22,232 in high schools. Expenditure for public-school education totaled \$14,130,703.04. Salaries of teachers averaged \$1112.

CHARITIES AND CORRECTIONS. State governmental branches operating in the welfare field in 1928 were the Board of Education, Board of Pardons, Board of Prison Commissioners, Board of Commissioners for the Insane, Veterans' Welfare Commission, and Board of Charities and Reforms. Under the Board of Education were the State School for the Deaf, Blind, and Feeble-Minded, State Industrial School, State Orphans' Home, and State Vocational School for Girls. Other State institutions were: State Prison, Deer Lodge; State Hospital for the Insane, Warm Springs; State Tuberculosis Sanitarium, and State Soldiers' Home, Columbia Falls. Inmates of the State Prison on Jan. 1, 1928, numbered 471.

POLITICAL AND OTHER EVENTS. A fire in the city of Helena July 16 caused damage estimated at \$1,500,000, destroying several buildings in the business district. The Montana tax levied by the County of Yellowstone on capital stock of the National Bank of Billings was invalidated by the United States Supreme Court April 9, on the ground that it exceeded the rate of taxation for State banks. An air mail service and passenger line connecting Great Falls with Salt Lake City, Utah, began operation August 1.

ELECTION. The vote of the State in the election of November 6 was peculiarly distributed between the parties. The voters gave Hoover and Curtis, the Republican National candidates, a substantial majority over Smith and Robinson. They reelected to the United States Senate a Democrat, Burton K. Wheeler, over Joseph M. Dixon, Republican, John E. Erickson, Democrat, was reelected governor, defeating Wellington Rankin, Republican. One Democrat and one Republican were reelected to the House of Representatives. The voters defeated a referendum for the adoption of a State law for prohibition enforcement identical in its provisions with the Volstead law. The popular vote for President was: Hoover (Rep.), 113,300; Smith (Dem.), 78,578.

OFFICERS. Governor, J. E. Erickson; Lieutenant-Governor, W. S. McCormack; Secretary of State, William Powers; Treasurer, W. E. Harmon; Auditor, George P. Porter; Attorney-General, L. A. Foot; Superintendent of Public Instruction, May Trumper.

JUDICIARY. Supreme Court: Chief Justice, Lew L. Callaway; Associate Justices; John A. Matthews, Albert J. Galen, Albert P. Stark, and Henry L. Myers.

MONTANA, STATE UNIVERSITY OF. A State institution for the higher education of men and women at Missoula, Mont., founded in 1895. The enrollment for the autumn of 1928 was 1455, of whom 804 were men, and 651 women, distributed among the various schools as follows: Arts and sciences, 983; business administration, 69; forestry, 88; journalism, 136; law, 50; music, 22; pharmacy, 62; music specials, 32; and unclassified, 13. In the summer session 498 students were registered, of whom 120 were men and 378 were women. The faculty had 96 members. The productive funds and income for the year amounted to \$472,532. There were about 145,000 volumes in the library, including government documents. President, Charles H. Clapp, Ph.D.

MONTENEGRO, mōn'tā-nā'grō. An integral part of the State of Jugo-Slavia. Before the War it was a Balkan kingdom, bounded by Serbia on the east. Albania on the south. Dalmatia on the west, and Herzegovina on the west and north, with an area of 5603 square miles and a population of 436,789 on Jan. 1, 1917. After Dec. 1, 1918, its status was indeterminate until 1921 when it became an integral part of Jugo-Slavia. The area in 1921 was placed at only 3733 square miles, and the population according to the census of that year, 199,857. Capital, Cetinje, with a population of 5500. See JUGO-SLAVIA.

MOON. See ASTRONOMY; GEOLOGY; PHYSICS.

MONTSERRAT, mōnt'sē-rāt'. One of the presidencies of the Leeward Islands. See LEEWARD ISLANDS.

MORAVIANS. A religious denomination comprising, in the United States, three branches: The Moravian Church (Unitas Fratrum); the Evangelical Union of Bohemian and Moravian Brethren in North America; and the Independent Bohemian and Moravian Brethren Churches. It was formed in Bohemia in 1457 under the leadership of John Huss and Jerome of Prague, and opposed the efforts of Austria and the Roman Catholic authorities to suppress it. At the beginning of the Reformation, it had more than 400 churches. In 1741 Moravians settling at Bethlehem, Pennsylvania, founded the first Moravian Church in the United States. The doctrine is evangelical, without a creed peculiar to itself, and in its polity the denomination follows a modification of the episcopacy, having a ministry of three orders: bishops, presbyters, and deacons.

THE UNITAS FRATRUM, the largest branch, is organized in two coördinate provinces: the Northern, with a provincial synod meeting every fifth year (a meeting of the Northern Province was to be held in 1930); and the Southern, of which the provincial synod meets every third year. The church maintains the following five educational institutions: Linden Hall, Lititz, Pa.; Moravian College and Theological Seminary, and Moravian Seminary and College for Women, Bethlehem, Pa.; Nazareth Hall, Nazareth, Pa.; and Salem Academy and College for Women, Winston-Salem, N. C. Missionary workers are maintained in southern California and Alaska, and in Nicaragua, the West Indies, Jamaica, Labrador, Surinam, South America, the Himalayas, and Unyanwesi, Central Africa. The official periodical, *The Moravian*, is published weekly at Bethlehem, Pa. On Jan. 1, 1928, there were: 131 churches; 159 ministers; 26,394 communicant members, although the actual membership was estimated at 36,516; and 123 Sunday schools with 21,534 scholars.

THE EVANGELICAL UNION OF BOHEMIAN AND MORAVIAN BRETHREN IN NORTH AMERICA, of which the first congregation was organized in 1864, at Wesley, Tex., is under the direction of a synod which meets each year on July 6, the day of the death of John Huss. In 1926 (the latest year for which figures were available) this denomination reported 34 churches in North America with 5241 members and 24 Sunday schools, with an enrollment of 1708; total expenditures were \$12,023; and value of church property \$76,700.

THE INDEPENDENT BOHEMIAN AND MORAVIAN BRETHREN CHURCHES were founded in 1858 in College Township, Iowa. In 1926 there were three churches with one minister and 356 members, and three Sunday schools with 381 scholars.

MORA Y DEL RIO, THE MOST REV. JOSÉ. Mexican Roman Catholic prelate, died at San Antonio, Tex., April 22. He was born at Pajuarari, Mex., Feb. 24, 1854, and studied at Zamora, Mex., and at Rome. He was ordained to the priesthood in 1877. Sixteen years later he was elevated to the bishopric of Tehuantepec, and he later became Bishop of Leon. In 1908 he was consecrated as Archbishop of Mexico and head of the Church in the Republic. He was noted for his liberal views in religion and in economics, and while Bishop of Leon, about 1907, established what were then known as "agricultural congresses," designed to ameliorate the condition of the peons. Age and physical infirmities prevented Archbishop Mora from taking the active lead in opposition to the Government when the Church and the State were at odds, but in 1926 he was arrested on a charge of criticizing the Government, the charge being dismissed when he repudiated an interview supposed to have been given by him. In 1927 the archbishop and five other leading prelates of the Roman Catholic Church in Mexico were taken from their homes and placed on a train going to the American border, and thereafter he made his home at San Antonio, Tex. He was considered for elevation to the cardinalate in 1924 and 1926.

MORGAN, JAMES APPLETON. American lawyer and Shakespearean scholar, died August 15, at New York. He was born at Portland, Me., Oct. 2, 1845, and was graduated from Racine College, Wisconsin, in 1867 and from the Columbia Law School in 1869. Having been associate counsel for the Erie Railway and the Northern Pacific Railroad from 1875 until 1885, he retired from practice to write and to study early Shakespearean editions. He became president of the New York and Palisade Railroad Company, and of the Shakespeare Press Publishing Company. Mr. Morgan believed that before the Shakespearean folios were printed in 1623 the plays had been altered by Shakespeare and by actors and managers to suit various productions. To illustrate this theory he published the *Bankside Shakespeare* (1888-1892). He founded the Shakespeare Society of New York in 1885, and was its president for forty years. He arranged for the Poe cottage on upper Manhattan to be preserved, and he erected tablets to identify other Poe residences. He wrote: *Macaronic Poetry* (1870); *The Law of Literature* (1874); *Legal Maxims* (1877); *The Shakespearean Myth* (1880); *Shakespeare in Fact and Criticism* (1884); *A Study in the Warwickshire Dialect* (1884); *Shakespeare's Pronunciation as Deduced from the Puns in the Plays* (1884); *Shakespearean Commentators* (1885); *Digesta*

Shakespeareana (1887); *The People and the Railways* (1888); *The Society and the Fad* (1890). Besides the *Bankside Shakespeare*, he was editor of the following books: *Addison on Contracts* (1875); *Best on the Principles of Evidence* (1876); *Forsyth on Trial by Jury* (1876); *The Bankside Restoration Shakespeare* (1905-1908); *Genealogical History of the Family of Morgan from A. D. 605 to present times* (1880); *Mrs. Shakespeare's Second Marriage* (1925); and *The Transference of 16 non-Quarto Plays to the First Folio* (1925).

MORMONS. See LATTER-DAY SAINTS, CHURCH OF JESUS CHRIST OF.

MOROCCO. The largest of the Barbary States, occupying the northwestern corner of the continent of Africa; bounded on the west by the Atlantic Ocean, on the north by the Mediterranean Sea, on the east by Algeria, and on the south by the Sahara Desert and the Spanish colony of Rio de Oro. From an administrative and political point of view, Morocco is divided into three zones: First and most important, the French protectorate, including approximately 85 per cent of both area and population, with Fez as the political capital and Casablanca as the leading port and commercial centre; second, the Spanish protectorate, a narrow strip of land extending for about 300 miles from the Atlantic Ocean along the Mediterranean with Ceuta, Melilla and Tetuan as the principal localities; and third, the international Tangier zone ruled in accordance with the terms of the Paris convention of Dec. 18, 1923, between France, Great Britain, and Spain. The latest estimate of the total area places it at 218,525 square miles, of which the area claimed by Spain for her zone in the north was 8000 square miles; for her southern zone, 9500 square miles; and for Ifni on the west coast, 800 square miles. In 1921, the area effectively held by the French was estimated at 92,664 square miles.

A census of the French zone taken in March, 1926, puts the population at 4,016,882 native Moslems, 107,552 native Jews, and 104,712 foreigners, making a total of 4,229,146. That of the Spanish zone may be put at something under 1,000,000 and that of the Tangier zone at about 80,000. The largest towns in the French zone with their populations according to the census of 1926 are Marrakesh, 149,263; Casablanca, 106,608; and Fez, 81,172. In the Spanish zone the largest town is Tetuan with a population of 24,000. The population of Tangier is approximately 60,000. The chief languages are French, Spanish, Arabic, and Berber dialects. According to the latest available statistics, there were in the French zone 199 schools; in the secondary schools there were 188 teachers and 2822 pupils; in the high schools, 26 teachers and 417 pupils; in the primary schools, 645 teachers and 23,327 pupils; in the professional schools, 79 teachers and 1029 pupils. There are Moslem schools at Rabat and Fez and a research institute for the study of the Arabic and Berber languages at Rabat.

PRODUCTION. The most important industry is agriculture. The principal crops are cereals, especially wheat and barley, beans and chick-peas, canary-seed, cumin and coriander, linseed, olives, grapes and other fruits, and especially almonds. Stock raising is an increasing industry. In 1926 there were in the French Zone, 1,932,840 cattle, 9,248,462 sheep, 3,037,731 goats, 58,911

pigs, 190,251 horses, 562,835 asses, and 117,917 camels. Although no coal is found in Morocco, the rich mineral resources include phosphates, the output of which in 1927 was 1,183,469 tons, iron ore, gold, silver, tin, copper, and petroleum. The phosphate mines are exploited by the Government and under its monopoly.

COMMERCE. No later figures for commerce were available than those given in the preceding YEAR BOOK, when, in 1926, exports were valued at 710,555,155 francs and imports at 1,692,268,000 francs.

FINANCE. The estimated revenue for the French Zone according to the budget for 1928 was 631,374,610 francs and the estimated expenditure 631,374,081 francs. The budget for the Spanish Zone for the same year provided revenues of 55,913,441 pesetas and expenditures of 59,913,441 pesetas. In the Tangier Zone the revenue for 1927 was 27,000,000 francs and the expenditure 22,000,000 francs.

COMMUNICATIONS. In 1926, 1723 vessels of 2,061,302 tons entered the ports of the French Zone and 1599 of 1,169,405 tons entered the ports of the Tangier Zone. There are approximately 1100 miles of railway in Morocco.

GOVERNMENT. The Tangier Zone is permanently neutralized and demilitarized and is governed by an international control organization. The French Zone constitutes a protectorate, under a French and native administration. The highest local authority is the French Resident General. The office of Sultan continues, but the Sultan is obliged to follow the advice of the French Resident General in all matters. The position of War Minister is held by the officer commanding the French troops in Morocco. The Spanish Zone is virtually governed by the Spanish High Commissioner. Sultan in 1928, Sidi Mohammed, succeeded his father Moulay Youssef, Nov. 18, 1927. French Resident General, Theodore Steeg (appointed Oct. 11, 1925); Spanish High Commissioner, General Sanjurjo.

MORROW, DWIGHT W. See MEXICO under *History*.

MOSAIC DISEASES IN PLANTS. See BOTANY under *Plant Diseases*.

MOSHER, mō'zhēr, ELIZA MARIA. American physician, died at New York, October 16. She was born at Poplar Ridge, Cayuga County, N. Y., Oct. 2, 1846, and after her graduation from the medical school of the University of Michigan in 1875, did post-graduate work at London and Paris. Being at this time one of the few women in her profession, she was the first to receive the position of resident physician at the women's reformatory of Massachusetts. After serving in that capacity, 1877-79, she was made superintendent, in 1881. Dr. Mosher next acted as associate professor of physiology and as resident physician, at Vassar College, 1883-86. She returned to the University of Michigan ten years later, as dean of women and professor of hygiene and home economics, resigning in 1902, in order to undertake private practice, in which she continued until her death. She also lectured on hygiene at Adelphi College, Brooklyn, 1903-06, and during the World War she worked with the American Women's Hospitals. She was one of the founders of the American Posture League, and was honorary president of the Medical Women's National Association. For nineteen years she served on the milk committee of the Medical Society of Kings County. She was the

American representative at the International Congress of Medical Women, at Geneva, in 1923. Dr. Mosher wrote numerous medical articles and a popular book, *Health and Happiness* (1911).

MOSQUITOES AND DISEASE. See ENTOMOLOGY, ECONOMIC.

MOTH-PROOFING. See ENTOMOLOGY, ECONOMIC.

MOTHS. See ENTOMOLOGY, ECONOMIC.

MOTION PICTURES. See MOVING PICTURES; PHOTOGRAPHY.

MOTOR BOATING. See YACHTING.

MOTOR CARS, BUSES, TRUCKS, ETC. See AUTOMOBILES; RAILWAYS; ROADS AND PAVEMENTS.

MOTOR FUEL. See CHEMISTRY, INDUSTRIAL.

MOUNT HOLYOKE COLLEGE. An institution for the higher education of women at South Hadley, Mass., founded in 1837. The registration for the autumn session of 1928 was 1030, distributed as follows: Graduate students, 23; seniors, 234; juniors, 207; sophomores, 271; freshmen, 295. The faculty, including professors, associate professors, assistant professors, instructors, and chief administrative officers, numbered 124, and there were 74 assistants, readers, graduate assisting fellows, curators, and secretaries. New appointments for the year 1928-29 included: Mrs. Alice Browne Frame, acting dean of residence; Harriet Newhall, executive secretary of the board of admission and assistant to the president; Grace M. Bacon (returned from a three-year leave of absence), associate professor of German; Mrs. Martha Brown Fincke, assistant professor of music; and Helen Wolcott, instructor in history and literature. The productive funds of the College for 1927-28 amounted to \$3,965,681, and the income to \$1,203,152. There were 104,000 volumes in the library. During the year the College acquired two small houses in the village one of which was converted into a residence for graduate students and assistants, and the other for freshmen; while a building ("Playshop") to serve the purposes of the English course as a laboratory in the production of original plays, was under construction. President, Mary Emma Woolley, A.M., Litt.D., L.H.D., LL.D.

MOUNT VERNON MEMORIAL HIGHWAY. See ROADS AND PAVEMENTS.

MOVING PICTURES. The talking pictures, introduced to the public in 1926, had established their economic position in the United States in 1928, and by the end of the year provision had been made for wiring 1000 motion-picture theatres. They stood, therefore, a fertile field for both scientists and artists, for the new method was still as imperfect as were moving pictures in the first few years of their existence. The best sound productions of the year were those with Vitaphone music projected by discs synchronizing with the action of the film, and with only a few words, as *The Patriot*, and the Fox Movietone news reels, in which the sound was recorded simultaneously with the picture, and was inseparable from it. The music, as developed, had a mechanical tone, and was inferior to many of the larger moving-picture orchestras, but better than the music usually provided by smaller houses. The dialogue was more difficult to handle as the mechanism still was imperfect, while players who photograph well do not always speak effectively and pleasantly. Furthermore,

since motion-picture audiences do not sanction the freedom of expression accorded the stage, it was a delicate undertaking to crystallize the impression on the screen with spoken word without either offending tradition, or resorting to laughable platitudes. The first attempt with dialogue in a feature picture was *Tenderloin*, which was followed on July 7 by an all-talking picture, *The Lights of New York*. Both were considered by critics as far from successful, but were interesting as demonstrations of what could be done. Al Jolson in *The Singing Fool*, opening September 19, proved more successful.

Although the Movietone and Vitaphone were the leading processes of sound production in 1928, there were 49 non-synchronous, and 38 synchronous methods, including the Biophone, Cinephone, Phonofilm, and Sonora-Bristolphone. It was settled on October 24 that distributors could sell discs of any competent organization to houses which had been wired for the use of the Vitaphone and interchangeability was secured among the several disc systems.

Sound pictures during the year attracted the public, and producers recognized their permanence to the extent of \$5,000,000 alternations in the buildings of Hollywood by July 22, but the "silent drama" was by no means obliterated in 1928. Many proprietors of unwired houses went on a buying strike, and groups of musicians, about 100,000 of whom were put out of work, organized in protest against mechanical music.

Approximately 3000 short films of all types were released during the year, and about 820 features. Two hundred of these were imported, compared with 75 in 1927. Germany led with 83 films and England sent 37. Producers in Europe did not encourage talking pictures because the expense of wiring was so great, and they regarded them as an unproven experiment; there were only 20 houses wired in England, and two in Paris.

The film exports from the United States dropped to 222,122,586 feet in 1928, from 232,104,883 feet in 1927, the 10,082,297-foot decrease being due to quota legislation in other countries limiting the amount of American imports, and to the improvement of production in such countries. The English quota limiting American productions remained in force during the year, and after considerable controversy the French Government also fixed a quota for American films. In spite of this general decrease in American exports, a few countries, France, Germany, Spain, Brazil, and several with less important markets, used more American films in 1928 than in the previous year. Latin America remained the greatest quantity consumer, and films exported to Europe continued to bring the greatest revenue to the American industry, Great Britain alone paying \$1,440,036 in 1928.

In the raw-film trade, the United States increased its exports of sensitized but not exposed film during 1928 from 49,511,961 feet in 1927, to 75,015,238 feet. There was a corresponding decrease of sensitized film imports, 261,754,948 feet in 1928, and 278,013,054 in 1927. Negative imports were increased, however, 2,576,065 feet entering the United States in 1928, and 2,283,473 feet in 1927. There was a similar increase of positive film imports, 5,243,457 feet in 1928, compared with 3,834,343 feet in 1927. See PHOTOGRAPHY for mechanical and scientific developments.

MOWBRAY, HENRY SIDMONS. American decorative and figure painter, died at Washington, Conn., January 13. He was born Aug. 5, 1858, at Alexandria, Egypt, of English parents, who brought him to America in the following year. He was appointed to the United States Military Academy and studied there one year, but abandoned a military career for art. In 1878 he went to Paris, where he studied under Bonnat. He began his work as an illustrator and a painter of subtly refined subjects and portraits, such as "A Lady in Black" (Buffalo Academy), "Idle Hours" (National Gallery, Washington, D. C.), and "Le Destin." In later years he confined himself to decorative painting, in which he displayed artistic intuition, restraint, elegance of composition and draftsmanship, and warmth of tone. In the adaptations of Pinturicchio's frescoes in the Borgia Apartments of the Vatican which Mowbray made for the library of the University Club, New York, he thoroughly grasped the Italian master's style, and his original lunettes are no less admirable than the copied panels. Other fine decorations include the frieze, "Development of Law," in the Appellate Court, New York; mural paintings in the Congressional Library, Washington, the Federal Court, Cleveland, Ohio, the library of J. Pierpont Morgan, New York, and the private residences of C. P. Huntington and F. W. Vanderbilt, New York, and Larz Anderson, Washington. He received the Clark Prize of the National Academy in 1888, was elected a National Academician in 1891, and received a gold medal at the Pan-American Exposition, Buffalo, N. Y., in 1901. He was the first director of the American Academy at Rome, in 1903. After 1878 he made his home at New York and at Washington, Conn., where he executed mural paintings.

MOZAMBIQUE. See PORTUGUESE EAST AFRICA.

MUNICIPAL GOVERNMENT. About 400 municipalities, mostly in the United States, had adopted the city manager form of government by the close of 1928. Of these, 16 were in Canada and two were in New Zealand. In addition, a manager for the City of Dublin, Irish Free State, was under consideration during the year, in accordance with recommendations made by a committee appointed by the general government. A detailed tabulation of manager cities, including variations from standard type, date in effect, and name and salary of manager, corrected to March 10, 1928, was given in *Public Management* (Lawrence, Kan.) for March, 1928, in accordance with its yearly custom. The detailed list was accompanied by a spot map and by summaries showing the number of cities in which the plan went into effect, and by years from 1908 on. The same journal for September, 1928, includes a summary up to September 1 without details. The latest summary indicates that deducting the 11 cities that have abandoned the plan, there were 390 manager cities on Sept. 1, 1928, of which 15 were in Canada and two in New Zealand.

In November, the manager plan was adopted by Fall River, Mass., by a popular vote of 15,009 for to 14,345 against. The estimated population of Fall River was about 125,000. The new plan was to be effective Jan. 1, 1929. Stimulus for the adoption of the plan was said to have been given by the conflagration in February, 1928, which destroyed the central part of the

city. Other cities that adopted the manager plan in November were Portsmouth, Ohio, and Lexington, Covington, and Owensboro, Ky. There were large majorities for the plan in Lexington and Covington, and a slender majority in Owensboro. Early in the year, Tampa, Fla., voted to change back from the manager to the mayor-and-council plan, while on April 24 Cleveland, Ohio, voted against giving up the manager plan and proportional representation for election of the members of the council, the vote being about 44,000 to 41,000. Abandonment of the manager plan at Cleveland was also defeated in November, 1927, by a majority of 6400 in a total vote of 164,000.

Toledo, Ohio, voted against adoption of a council-manager charter in November. Two plans were submitted: (1) A small council to be chosen by proportional representation, recommended by one of the 15 members of the charter commission; defeated by about 60,000 to 35,000 votes. (2) For a council of 11 members, 10 chosen by wards and one at large, recommended by the five other members of the charter commission; defeated by a vote of about 57,000 to 27,000.

The Rhode Island Legislature of 1928, as did that of 1927, failed to grant a council-manager charter to Newport in accordance with a large popular majority approving such a charter at the November election in 1926 (see 1928 YEAR BOOK). The voters of Pennsylvania, at the November election, approved an amendment to the State constitution authorizing the creation of the Metropolitan City of Pittsburgh to be composed of the entire area comprising Allegheny County, under "a federal system which preserves the independence of the units in local matters but provides for coöperation in obtaining service of common benefit." One of the arguments for the proposal was that if adopted it would make Greater Pittsburgh the fourth city of the country. Work on drafting a charter to put the plan into effect was in progress at the close of 1928 with the expectancy that the charter bill would be introduced in the State Legislature the following February.

BIBLIOGRAPHY. New books of importance issued during the year were: Griffith, *The Modern Development of City Government in the United Kingdom and the United States* (London and New York); Maxwell, *Contemporary Municipal Government in Germany* (Baltimore); National Municipal League Committee on Municipal Programme, *A Model City Charter* (New York); Thompson, *Urbanization: Its Effect on Government and Society* (New York); White, *The City Manager* (Chicago).

See also CITY PLANNING, GARBAGE, MUNICIPAL OWNERSHIP, ROADS, SEWERAGE, WATER WORKS.

MUNICIPAL LEAGUE, NATIONAL. An organization to promote efficient and democratic government in city, county, state, and nation; founded in 1894 and incorporated in 1923. It has committees of experts at work studying, from practices in different parts of the United States, sound principles of government methods and government administration. These committees submit reports which are approved by the League and distributed where they will have most effect. The active committees in 1928 were as follows: Committee on Government for Regional Areas; Committee on Municipal Budget Law; Committee on Revising Model City Charter; and Committee on Election Administration. Re-

cent publications included a model municipal bond law; a model system of election registration; and a monograph, *The Merit System in Government*.

The thirty-fourth annual meeting of the League was held in Cincinnati, Ohio, October 16 and 17. Joint sessions held with the Governmental Research Association and the National Association of Civic Secretaries had a large attendance. Topics of discussion included: The Negro and Public Affairs; Measurement Standards in Government; What is the City Government's Responsibility in Housing?; Proportional Representation and Democracy in Election; Selling the Work of Government to the Public.

Among the speakers on the programme of the annual meeting were: Alfred Bettman, Cincinnati, Ohio; Robert T. Lansdale, Council of Social Agencies, Montclair, N. J.; Ralph Johnson Bunche, Howard University, Washington, D. C.; Charles A. Beard, New Milford, Conn.; Clarence E. Ridley, New York Bureau of Municipal Research; Max Hirsch, Cincinnati; Lent D. Upson, Detroit Bureau of Governmental Research; William C. Beyer, Philadelphia Bureau of Municipal Research; Louis Brownlow, Fair Lawn, N. J.; S. J. Herman, Michigan Housing Association; Richard S. Childs, president, National Municipal League; Arthur Collins, Financial Adviser to Local Authorities of England; Stephen B. Story, City Manager, Rochester, N. Y. The officers of the League in 1928 were: Richard S. Childs, president; Carl H. Pforzheimer, treasurer; Russell Forbes, secretary; G. R. Howe, assistant secretary; H. W. Dodds, editor of National Municipal Review. Headquarters are at 261 Broadway, New York.

MUNICIPAL OWNERSHIP. On Dec. 1, 1928, the East Bay Municipal District took over the entire property of the East Bay Water Company supplying Oakland, Berkeley, Alameda, and six other California municipalities. The purchase price was about \$34,000,000. This covers 42,000 acres of land, nearly 140 miles of water pipe, pumping and filtration plants, and reservoirs. The district for several years past had been engaged in bringing in a gravity water supply from an impounding reservoir through an aqueduct nearly 100 miles long. Early in the year the voters of San Francisco approved the purchase by the city of the property of the Spring Valley Water Company for some \$40,000,000. Four previous votes on this purchase all failed to give the necessary legal majority, although there was each time an actual majority (see 1927 YEAR BOOK). At the close of 1928, the city was making plans for a bond issue to cover the purchase price, with the hope of taking over the property on February 1. Like the district across the bay, San Francisco was constructing works for a gravity water supply. The Hetch Hetchy impounding reservoir was already completed and also a portion of the Hetch Hetchy aqueduct. Condemnation proceedings were under way on behalf of the cities of Paterson, Passaic and Clifton, N. J., for the property of the Passaic Consolidated Water Company. When this and the San Francisco purchases have been completed, there will remain in the United States only six cities of more than 100,000 population supplied by private water companies. The city council of one of these, New Haven, Conn., decided in 1928 not to exercise its purchase option and renewed its contract with the New Haven Water Com-

pany for another 25 years. Bridgeport, Conn., Scranton, and Wilkes-Barre, Pa., and Indianapolis, Ind., all cities of over 100,000 inhabitants, are supplied by private companies. Ypsilanti, Mich., voted not to sell its gas works.

During the year, Montreal, P. Q., completed the purchase of the waterworks of the Montreal Water and Power Company (see 1927 YEAR BOOK).

MUNKITTRICK. See TALBOT, HOWARD.

MURDER. See CRIME.

MURRAY, SIR JOHN. British publisher and head of the John Murray publishing house in England, died at Brighton, November 30. Born at London, in 1851, he was graduated from Magdalen College, Oxford, and received the Ph.D. degree from the University of Athens. The publishing firm was established in 1768, and he was the fourth John Murray at its head. He was president of the Publishers' Association, 1898-99. In 1908 Sir John became high sheriff of the County of London. Besides being honored with the Ordre Royal du Saveur, of Greece, and the Ordre de la Couronne, of Belgium, he was created Commander of the Royal Victorian Order in 1913, and Knight Commander of the Royal Victorian Order in 1926. He wrote, *Memoirs of John Murray III*, and edited, among other books, *Gibbon's Autobiography* and *Byron's Correspondence* (1922).

MURRAY RIVER WORKS, AUSTRALIA. See CANALS.

MUSCLE SHOALS. See AGRICULTURAL LEGISLATION; FERTILIZERS; and UNITED STATES.

MUSEUMS, ART. See ART MUSEUMS.

MUSIC. GENERAL NEWS. The outstanding event in the world of music was the universal observance of the centenary of Schubert's death. See SCHUBERT CENTENARY.

Ever since the nineties of the last century, when Richard Strauss rose to the dominant position which he has rightfully occupied since then, the première of a new work from his pen has been a musical event of international importance. During the year 1928, musicians from all parts of the world gathered in Dresden and in Vienna to hear the master's latest opera, *Die ägyptische Helena*, and a new choral work, *Die Tageszeiten*, the latter written especially for the Schubert celebration. The opera was heard for the first time at Dresden, June 6, with Rethberg and Taucher in the principal rôles, under the direction of Fritz Busch. As a matter of course, the performance was well nigh flawless in all details, and the outward success overwhelming. Critical opinion, on the whole, was favorable and to the effect that the composer, while offering nothing unexpected or startling, had risen once more to the heights of his earlier symphonic poems. The première itself was timed so that it opened the series of festival performances, lasting throughout the month of June, which were arranged to commemorate the semi-centenary of the opening of the present opera house.

Inasmuch as almost all the operas of Strauss had their première at Dresden, it was fitting that, besides five repetitions of *Die ägyptische Helena*, the festival included *Elektra*, *Der Rosenkavalier*, *Die Frau ohne Schatten*, and *Intermezzo*. Neither were two former principal conductors of the institution forgotten, Weber (1817-26) and Wagner (1843-48), the former represented by *Der Freischütz*, and the latter by

Der fliegende Holländer, *Tannhäuser*, and *Die Meistersinger*, of which the first two had their première in Dresden (1843, 1845).

On June 11, Vienna celebrated the birthday of Richard Strauss by the local première of *Die ägyptische Helena*, with Jeritz and Graarud as principals, under the personal direction of the composer. As a foregone conclusion, enthusiasm ran riot. For a critical estimate of the work, see below the American première under *Opera*.

In Lübeck, Karl Eggert discovered the novel on which Weber wrote his early opera, *Peter Schmoll* (Augsburg, 1803), reconstructed the lost libretto, and, in March, brought out the work at the local opera house with considerable success.

Under the general supervision of Siegfried Wagner, the annual Bayreuth Festival took place from July 19 to August 19. The repertory was identical with that of the preceding year, three complete cycles of the *Ring des Nibelungen*, the first and second conducted by Franz von Hoesslin, the third by Siegfried Wagner, five performances of *Tristan und Isolde*, under Karl Elmendorff, and five performances of *Parsifal*, under Karl Muck. As usual, the house was sold out for every performance and soloists, orchestra, and chorus combined to achieve the customary high level of excellence.

At Zoppot, on the Baltic Sea, five performances of *Parsifal*, attended by large audiences, were given in the open forest. The conductors were Max von Schillings and Karl Tutein.

In Leipzig, an Internationale Bruckner-Gesellschaft was founded, with Max Auer as president and Franz Schalk, Karl Muck, Siegmund von Hausegger, and Friedrich Klose as honorary presidents.

Following the example of the Moscow Persinians, an orchestra without conductor, founded in 1922, a number of Leipzig musicians banded themselves together and, in May, presented an all-Beethoven programme (*Egmont, Eroica, Violin-concerto*) with Gustav Havemann as soloist. Three weeks later the same programme was repeated in Berlin. As to the value of the experimental critical opinions differed widely in both cities.

In Berlin, Hermann Gura organized the Deutsche Gastspieloper, a complete operatic company under the general direction of Richard Falk. The object was to give a certain number of performances of standard works in every German city that did not support its own municipal theatre.

Nina Grieg, the widow of the great Norwegian master, presented to the Public Library at Bergen the complete correspondence between herself and husband, on the condition that the sealed packages containing the letters were not to be opened till after her death.

After having been completely remodeled, the famous Costanzi Theatre at Rome was reopened on February 27 with a gorgeous production, under Marinuzzi, of Boito's *Nerone*, which on that occasion had its Roman première. The name of the institution was also changed to Teatro Reale dell'Opera. By order of the Minister of Public Instruction, the Italian Government bought Carvalhaes' famous collection of 38,000 opera librettos and presented it to the library of Santa Cecilia in Rome. In November, Milan heard the first complete performance of

Bach's *Mass in B minor*. This much-belated première was given by the Berliner Singakademie, under its regular conductor Georg Schumann.

An event unique in the annals of opera is to be recorded about the Staatsoper of Vienna. At the invitation of the management of the Grand Opéra, the Vienna company gave in Paris, in May, a series of guest performances of *Die Walküre*, *Tristan und Isolde*, *Rosenkavalier*, and *Tosca*, creating a veritable furore. Before leaving the hospitable French capital, each of the principals was made a chevalier of the Legion of Honor and an invitation had been extended to repeat the visit in the coming spring. As the year was drawing to a close, the management of the Vienna company announced that they had accepted not only this invitation from Paris but similar invitations from La Scala in Milan, the Royal Operas of Stockholm and of Copenhagen, and the Staatsoper of Berlin.

With the beginning of its fifth season in the autumn, the Curtis Institute of Music, in Philadelphia, abolished all tuition fees. Thereafter, students were to be admitted only on the results of regular entrance examinations. The increase of the endowment fund to \$12,500,000 by Mrs. Bok made free tuition possible.

John Erskine, chairman of the Board of Directors, was elected president of the Juillard Foundation, of New York. To the numerous scholarships already established, fifteen opera scholarships were added to enable American students to gain practical experience in Germany. Because of the remarkable success of Deems Taylor's opera, *The King's Henchman*, produced at the Metropolitan Opera House, the Foundation awarded \$5000 to the composer to enable him to devote a greater part of his time to composition.

In New York there was established the Schubert Memorial, whose object is to secure for talented young executants a début under the most favorable conditions. A number of well-known patrons of music organized themselves, with Mrs. Ernest Hutcheson as chairman, and issued an appeal for voluntary contributions which met with prompt and generous response. Ossip Gabrilowitsch was elected president, with an advisory board consisting of famous conductors, Bodanzky, Damrosch, Kussevitzy, Mengelberg, Schelling, and Stock, with Stokowski as chairman. Aspirants under 30 years of age may present themselves before the board in April. As a minimum requirement, they must have a repertory of four concertos (or arias) with orchestra and two complete recital programmes, each occupying one hour. Of the applicants, the most talented four will be chosen, two to appear at each of the two annual concerts to be given in Carnegie Hall in December and January. For the first of these concerts, which took place on December 5, 80 performers of the Philharmonic Symphony Orchestra, under the direction of Willem Mengelberg, were engaged. The fortunate débutantes were Muriel Kerr, pianist, and Sadah Shuchari, violinist.

In the wake of the Schubert Prize Competition sponsored by the Columbia Phonograph Company (see YEAR BOOK, 1927; also SCHUBERT CENTENARY), there followed a veritable flood of competitions offering prizes from \$100 to \$25,000 for all kinds of compositions from symphonies to jazz. The Victor Talking Machine Company of

ferred \$25,000 for a symphony by an American composer (native-born or naturalized), and two prizes of \$10,000 and \$5000 for a popular piece for a jazz band. These latter were awarded, in December, to Thomas Griselle, of Mount Vernon, for *Two American Sketches*, and to Rube Bloom, of Brooklyn, for *The Song of the Bayou*. The judges of the symphonic competition, which closes May 28, 1929, are Stokowski, Ganz, Stock, and Samaroff.

A \$3000 prize for a symphony offered by *Musical America* was awarded to Ernest Bloch for a work entitled *America*. The prize carried with it a guarantee for performance by seven of the great symphony orchestras of the country, the New York Philharmonic-Symphony, Philadelphia, Chicago, Boston, Cincinnati, Los Angeles, and San Francisco orchestras, each of which produced the work on December 20. The judges were Stokowski, Stock, Kussevisky, Hertz, and Damrosch, and 92 scores were submitted.

Two prizes of \$6000 and \$4000 for chamber music, open to composers of all nations, were offered by the Musical Fund Society of Philadelphia. Six hundred and forty-three scores were received. The judges were Mengelberg, Reiner, Stock, Laciari, and Combs. The first prize was evenly divided between Bela Bartok (Hungary) and Alfredo Casella (Italy), the second between H. Waldo Warner (England) and Carlo Jachino (Italy).

Besides these competitions just mentioned, there were announced some two dozen or more of lesser importance in the United States alone. Some years ago the value of such prizes began to be seriously questioned in various quarters, because of the inferior quality of the prize-winning scores. As a matter of fact, these critics seemed to have a rather strong argument in their favor, when they point out that not a single one of the world's great masterpieces of music ever carried off a prize, and, conversely, that, with the solitary exception of Mascagni's *Cavalleria Rusticana*, no prize work has so far found its way into the standard operatic or concert repertory.

These considerations were very largely responsible for the withdrawal of the prizes given formerly by the Berkshire and the North Shore festivals. On the other hand, it has been argued that, if awards are withheld on the ground of insufficient merit, neither competitors nor public are inclined to accept such decisions as fair, and that there may spring up a general feeling of distrust of the good faith of those offering prizes. Under these circumstances, the courage of the jury rejecting all the 21 cantatas sent in for the \$1000 prize announced by the New York Society of the Friends of Music was to be highly commended. The judges in this case were Bodanzky, Mengelberg, Goldmark, Friedberg, and Schelling.

Professor Leon Theremin, of Moscow, who during the preceding year had created a sensation in Europe by demonstrating his invention of producing music from ether waves (see *YEAR BOOK*, 1927), gave his first public demonstration in the United States at the Metropolitan Opera House on January 31. By moving his hands before two antennæ, each standing in a field of electro-magnetic waves, he produced the blast of a steam siren, the typical radio howl, and real musical tones imitating the timbre of various

musical instruments. The inventor then played Schubert's *Ave Maria* and an étude by Scriabin, but only the melody, without harmonic accompaniment. There could be no question regarding the beauty of the tone quality, but there were frequent deviations from pitch, which latter defect, undoubtedly, must be ascribed to the inventor's insufficient skill as a musical performer. From a purely scientific standpoint, the invention was truly remarkable, but it seemed to be still in the experimental stage as far as its use as a musical means of expression is concerned.

While Professor Theremin was giving demonstrations in the United States, two French inventors, each independently of the other, experimenting in the same field, exhibited the result of their labors in Paris, in August. Neither inventor was a scientist by profession, Maurice Martenot being a cellist and René Bertrand a sculptor. The following is a brief summary of a report of the demonstration by Henri Prunières, one of the foremost of French musicologists. Both inventions employ a much simpler apparatus than Theremin's for the generation of electro-magnetic waves. In Martenot's instrument, the pitch is controlled by a wire over a graduated scale, and thus correct intonation is made possible for less skilled performers. Being a virtuoso on the cello, M. Martenot was able to give a really artistic performance on his new instrument, producing wonderful legato and staccato effects, as well as executing with wonderful precision tremolos, trills, and various other embellishments. The instrument is capable of yielding a great variety of orchestral timbres and the tone quality is always beautiful.

Bertrand's instrument, known as the Dynaphone, was considered distinctly inferior in the quality of its tone, which is always shrill, and incapable of varying the timbre, which resembles that of the saxophone. However, it possesses one great advantage. The inventor has succeeded in eliminating interference, so that it is possible to play several Dynaphones simultaneously in the same room. Honegger, who was present at the demonstration, was so much impressed, that he immediately wrote a little ballet, *Roses de Métal*, for a small Dynaphone orchestra. Upon its production at the Petit Scène, five weeks later, it was remarked that even in that short time the inventor had succeeded in improving the tone quality to some extent.

ARTISTS. On January 12, Vladimir Horowitz made his American début playing Tchaikovsky's piano concerto in B-flat minor with the New York Philharmonic Orchestra. At the same concert, Sir Thomas Beecham made his American début as conductor, and the tremendous ovation he received after his first number placed any newcomer in a very difficult position. The conductor's great reputation had preceded him, the pianist came unknown and unheralded, yet, after the first movement, Mr. Horowitz had electrified his hearers, and at the conclusion of the concerto the prolonged applause of the audience left no room for doubt that the young Russian had come and conquered. Of all the newcomers of the year, he scored the greatest success. His subsequent appearances in New York and other cities, whether with orchestra or in recital, were repetitions of his initial triumph. Although still in his early twenties, his interpretation is that of a master, combining brilliance with depth. His technic is stupendous, his octave playing

reaching the limits of possible speed but never displayed for its own sake.

Other débutants who left a favorable impression were Luigi Franchetti (March 17), Rita Neve (October 18), Ruth Redefer (October 28), Thalia Cavadias (November 15), Vladimir Drozdov (November 21), Maleva Harvey and Muriel Kerr (December 5), and Victor Labunski (December 11). It is scarcely necessary to comment on the numerous concerts given by established favorites, excepting the case of Rudolf Ganz, whose return as a concert pianist, after his resignation as conductor of the St. Louis Symphony Orchestra, was greeted by large and enthusiastic audiences in the principal cities of the country.

Not a whit behind the pianists in their activity were the violinists. In spite of many tempting offers the parents of Yehudi Menuhin (see *YEAR BOOK*, 1927), adhered to their resolution of not exploiting their wonder-child. After another year of serious study under his teacher, Louis Persinger, the boy was heard again in San Francisco (December 5) and New York (December 27), and again he held his auditors spell-bound. But this time he had put aside his three-quarter-size violin and played on a magnificent Guarnerius, valued at \$35,000, loaned to him from the famous Wurlitzer Collection. On November 15, Mr. Persinger introduced in San Francisco the second of his violin-prodigies, Ruggiero Ricci, 8 years old. According to critical reports, the boy played the Mendelssohn concerto with wonderful tone, dazzling technic, incisive rhythm, and, considering his tender years, admirable understanding.

From Chicago came the report that, on February 26, Giulia Bustabo, a girl of 10, created a sensation at her début with the Civic Orchestra, under Frederick Stock, when she played the Wieniawski concerto in F# minor. In Boston, Ruth Posselt, a former wonder-child, introduced herself as a full-fledged artist in a superb rendition of the Tchaikovsky violin-concerto with the People's Symphony Orchestra, under Emanuel Ondricek. Other fine violinists who made their début during the year were Henri Temianka (January 23), Minna Krokowsky (February 17), Leo Stokov (March 26), and Sadah Shuchari (December 5).

On October 23, New York had the first opportunity of hearing the renowned conductor of the Boston Symphony Orchestra as soloist on the double-bass. On that occasion, Mr. Kussevitzy played his own concerto in A minor for double-bass and orchestra, and was assisted in the other numbers by Henri Casadesus (*viole d'amour*) and Pierre Luboschutz (piano). New York concurred in the verdict passed long ago by European critics, that Kussevitzy was the greatest living master of his instrument.

Unusual attention was attracted by the remarkable performances of two artists who introduced an instrument entirely unknown in serious concerts, the guitar. Andrés Segovia, a Spaniard, scored an instantaneous success at his début in New York (January 8) by his masterly rendition not only of national folk songs and dances but also by his arrangements of familiar pieces of the classic masters. His success in other cities was equally emphatic. Still more surprising was the exhibition given by the Italian, Pasquale Taraffo (New York, December 23), who played an instrument greatly improved by

his ingenuity. By increasing the dimensions of the ordinary guitar and adding several strings, he obtained not only a wider range, especially in the lower register, but also a mellower tone and more volume. This instrument he handled with real virtuosity.

CHAMBER MUSIC. The third Washington Festival of Chamber Music was held from April 27 to 29. The first concert was devoted to the world-première of Stravinsky's *Apollo Musagetes*, a ballet commissioned by the Library of Congress. It was performed by the string section of the Philadelphia Orchestra, directed by Hans Kindler, and proved a dull score with plenty of reminiscences from Haydn, Beethoven, Brahms, and Strauss. The second day introduced the celebrated Rosé String Quartet of Vienna (Arnold Rosé, Paul Fischer, Anton Rusitzka, Anton Walter), which on this occasion made its American début with Franco Alfano's cacophonous, disjointed string quartet, after which a string quartet by John A. Carpenter sounded almost like a masterpiece merely for its avoidance of ultra-modernistic effects. At the third concert, the Société des Instruments Anciens, of Paris, performed only compositions of the older masters. The fourth concert brought forth a new violin-sonata, in C, by Casella, and another work commissioned for the festival, Pierné's *Sonata da Camera*, neither work proving of particular value. The fifth concert consisted exclusively of works for chamber orchestra, older masters being represented by Muffat, Handel, and Haydn. Then followed a rapid *Spielmusik* by Hindemith and an exceedingly complex and enigmatic score by Respighi, *Trittico Botticelliano*, supposedly a musical commentary on three of the great painter's masterpieces. At the conclusion of the festival, Mrs. Elizabeth S. Coolidge once more offered a \$1000 prize for a composition for woodwind with horn or piano and the Library of Congress added a \$500 prize for a suite for two pianos. The first competition was open to composers of any nationality, the second only to American citizens. Both works were to be produced at the festival of the coming year.

Although the Berkshire Festival was transferred in 1924 to Washington, Mrs. Coolidge decided to celebrate the tenth anniversary of the first Berkshire Festival by a special festival held at South Mountain from September 19 to 21. The organizations which took part were the original Berkshire String Quartet (Hugo Kortschak, Jacques Gordon, Clarence Evans, Emeran Stoebner), which opened the first festival, the South Mountain String Quartet (William Kroll, Karl Kraeuter, Conrad Held, Willem Willeke), also founded by Mrs. Coolidge, and the Elshuco Trio (William Kroll, Willem Willeke, and Aurelio Giorni), also founded by Mrs. Coolidge and named after her [Elizabeth Shurtleff Coolidge].

Besides these artists, all intimately connected with former festivals, there participated also the Gordon String Quartet of Chicago (Jacques Gordon, Walter Hancock, Clarence Evans, Richard Wagner) and the famous Roth Quartet of Budapest (Feri Roth, Jenő Antal, Ferenc Molnar, Albert van Doorn), which latter on this occasion made its American début. Of the many new works presented, only one, Martinu's *Quintet* (with two violas), left anything resembling a definite impression. A violin sonata, by G. S. Smith, and Sextet in F, by Max Reger were

simply dull, while Schönberg's *String Quartet*, dedicated to Mrs. Coolidge, Malipiero's *Sonata a tre*, and Salzedo's suite, *Pentacle*, were typical futuristic effusions.

On January 15, Maurice Ravel made his American début as pianist in New York at a concert arranged by the Pro Musica Association. With the assistance of the Hart House String Quartet, he gave a programme of his own chamber-music compositions and proved himself an admirable ensemble player. As a composer, he needed no introduction, for he has long been esteemed also in the United States as the most important French composer since Debussy. His reception on this occasion, as well as on his later appearances, was most enthusiastic.

An unusually interesting concert was that given by the Beethoven Association of New York, February 13, when the programme, under the direction of Thaddeus Rich, was executed on valuable old Italian instruments from the collection of Rodman Wanamaker (see YEAR BOOK, 1926).

In Baltimore, the new Peabody String Quartet (Frank Gittleson, Orlando Apreda, Bart Wirtz, Herbert Bangs) gave its initial concert on January 29. The Dubinsky String Quartet (David Dubinsky, Jacob Simkin, Samuel Rosen, Benjamin Gusikov), all members of the Philadelphia Orchestra, began its career on January 18.

The International Society for Contemporary Music organized a Chicago branch, which gave its first concert on February 8.

All lovers of chamber music were dismayed at the unexpected announcement that at the end of the 1928-29 season the famous Flonzaley Quartet would be disbanded. Consequently, every concert of their farewell season was made the occasion of a tremendous ovation.

FESTIVALS. The 32d annual Maine Festival at Bangor (May 1-3) was the first under the direction of another conductor than William R. Chapman, the original founder. After the latter's resignation, in 1927, the officers of the Association offered the conductorship to Adelbert Sprague, professor of music at the University of Maine and conductor of the Bangor Symphony Orchestra. A new chorus of 550 voices was recruited from 15 cities and villages and, in order to utilize the forces of the music department of the university, the time of the festival was changed from October to May. The programme of the first festival conducted by Mr. Sprague also marked a radical departure from the scheme followed by his predecessor. Instead of popular programmes featuring famous artists, this year's festival presented really great works, Brahms' *Schicksalslied* and *Second Symphony*, Franck's *Psalm 150*, and excerpts from the later works of Wagner.

The 22d Bach Festival at Bethlehem (May 11, 12), under Dr. John F. Wollé, brought as a novelty Bach's *Concerto for two pianos*, in C, played by Ruth Becker and Earle Laros. The second day, as customary, was devoted to the *Mass in B minor*.

The 4th annual Westchester Country Festival at White Plains (May 17-19), under Albert Stoessel, offered Mendelssohn's *Elijah*, sung by a chorus of 2000 voices, as the principal number.

The 8th annual Harrisburg Festival (May 14-17), under Ward-Stevens, marked a milestone in the history of the organization, when, for the first time it had the cooperation of a

full symphony orchestra. At the first concert, devoted exclusively to Mozart, the master's *Mass in C minor* had its American première. At the second concert, Henry Hadley conducted the world-première of his *Mirtil in Arcadia*, which had won the Philadelphia Sesquicentennial Prize. At the last concert, Saint-Saëns' *Samson and Dalilah* was given in concert-form.

The 35th annual Ann Arbor Festival (May 15-19), under Earl V. Moore, assisted by the Chicago Symphony Orchestra, began with the inauguration of the magnificent new organ in the Hill Auditorium. Palmer Christian, the university organist, performed Delamarter's *First Concerto for Organ and Orchestra*, the composer conducting the orchestra. The other important works were Pierné's *St. Francis of Assisi* and Verdi's *Aida* in concert form.

The 20th annual North Shore Festival, at Evanston (May 24-6), under Peter Lutkin, attracted a smaller audience than the festival of the preceding year, in spite of the fact that Verdi's great *Requiem* was the principal work.

At the 28th festival of the Northwestern Sängerbund, held in Milwaukee (June 14-16), William Boeppler conducted a male chorus of 1000 voices, and Otto Singenberger, a children's chorus of 3000.

The 69th annual Worcester Festival took place under the direction of Albert Stoessel (October 3-5). The high points were Purcell's *Dido and Æneas* and Saint-Saëns' *Samson and Delilah*, while a novelty by Harold F. Darke, a motet, *Ring out, Ye Crystal Spheres*, made little impression.

ORCHESTRAS. Shortly after the resignation of Walter Damrosch, as permanent conductor of the New York Symphony Orchestra, came the unexpected announcement of the dissolution of the famous organization, which was just completing its fiftieth season. The last concert took place on April 1, under the direction of Fernandez Arbos. The final number, conducted by Damrosch, was the Adagio from Beethoven's *Ninth Symphony*. The last concerts from January to April were directed by Fritz Busch, Oscar Fried, and Fernandez Arbos, the latter making his American début on March 22. On February 10, Damrosch, as guest, conducted a special concert under rather unusual circumstances. As the orchestra was then actually completing the fiftieth season of its activity, it seemed natural to observe the semi-centenary, but, unfortunately, on the exact date (the first concert was given November 9, 1878), the orchestra would have ceased to exist. The anniversary of the death of its founder, Dr. Leopold Damrosch (Feb. 15, 1885), suggested the idea of making the concert a joint semi-centennial and memorial occasion. A new difficulty arose, when it was found that no suitable hall was available for that particular day, and thus, of necessity, February 10 was chosen. The programme consisted of Dr. L. Damrosch's *Festival Overture* and selections from his cantata *Sulamith* and Beethoven's *Fifth Symphony*, the latter having been performed at the society's first concert.

In May, at a joint meeting of the board of directors of the New York Philharmonic Society and the Symphony Society, the amalgamation of the two famous organizations was ratified, the new body to be known as the Philharmonic-Symphony Orchestra. Harry Harkness Flagler was chosen president and Clarence. H. Mackay

chairman of the board of directors, which was increased to 28 members by the election of six directors of the Symphony Society. The orchestra itself was increased but slightly by the addition of a few players from the Symphony Orchestra, no changes being made at the first desks.

The 1928 concert season was lengthened from 23 to 28 weeks, out-of-town engagements were reduced considerably, and the two pension funds were consolidated. Two regular conductors were appointed, Willem Mengelberg, in charge of the first half, and Arturo Toscanini, in charge of the second half of the season, and the policy of inviting distinguished guest-conductors was retained. The last season of the old Philharmonic Orchestra (the eighty-sixth) was directed by William Mengelberg (January 1-8). Sir Thomas Beecham (January 12-15), Bernardino Molinari (January 17-22), and Arturo Toscanini (January 26-April 1).

Comment on the familiar art of Mengelberg and Toscanini is quite superfluous. Both newcomers aroused tremendous enthusiasm. The new Philharmonic-Symphony began its fall season on October 4, under Mengelberg, while Damrosch was guest-conductor in November and December. The season brought forth an unusual number of novelties, the poor quality of which caused much unfavorable comment.

It seems to have become a regular policy of the Boston Symphony Orchestra to invite every season two guest-conductors. This year the guests were Maurice Ravel, who made his American debut as conductor in a programme of his own works on January 12, and Sir Thomas Beecham, who directed the concerts of January 19 and 20. Both made a deep impression. All the other concerts were under the direction of the regular conductor, Sergei Kussevitzy, who continued his practice of the preceding year of dividing his programmes evenly between works of the masters and the futurists.

After a year's leave of absence, Leopold Stokowski resumed the conductorship of the Philadelphia Symphony Orchestra in the fall. During his absence, the concerts were directed by Fritz Reiner, Ossip Gabrilowitsch, Pierre Monteux, and Willem Mengelberg.

Since the resignation of Rudolf Ganz, the St. Louis Symphony Orchestra continued the policy of engaging guest-conductors. The concerts of the year were directed by Bernardino Molinari, Carl Schuricht, Ethel Leginska, and Emil Oberhoffer.

On the occasion of the tenth anniversary of the foundation of the Cleveland Symphony Orchestra, Nikolai Sokolov, conductor, Mr. and Mrs. John L. Severance donated to the directors a million dollars on condition that another million and a half be raised by popular subscription. It was believed that this sum would suffice to erect a fine hall and establish a permanent endowment fund for defraying the annual deficit.

The People's Symphony Orchestra, of Boston, began its fall season under its new permanent conductor, Theophil Wendt, who made his American debut on November 3.

In spite of the protests and vigorous opposition of the Sabbath Association, the Pittsburgh Orchestral Association gave four symphony concerts (February 26, April 22, December 7, 8). At the first two concerts, Richard Hagemann and Eugene Goossens, respectively, directed a heterogeneous body of instrumentalists assembled for the occasion, while for the last concerts the

Cleveland Symphony Orchestra, under Nikolai Sokolov, was engaged.

Shortly after the conclusion of its first season of seven concerts, the Beethoven Symphony Orchestra, of New York, Georges Zaslawsky, conductor, issued the prospectus of its second season, announcing an imposing array of famous soloists, two distinguished guest-conductors, and more than 100 concerts to be given in New York and on tour. As a matter of history, the ambitious scheme collapsed after only one concert had been given in New York (October 11).

In Chicago a new organization, the Skalski Symphony Orchestra, under André Skalski, made its debut on November 21, creating a very favorable impression.

After the dissolution of the New York Symphony Orchestra, the majority of the players formed the American Symphonic Ensemble, with Paul Stassevitch as concertmaster, to prove that regular symphony concerts can be given without a conductor. For the first season they announced three concerts, the first of which took place on November 3 with a Beethoven programme (*Eroica* and *Violin concerto*, Max Rosen, soloist). The results, remarkable under the circumstances, were not such as to create a general demand for the abolition of the conductor. While the tonal balance was surprisingly good, the attack lacked precision, ritardandos and accelerandos showed uncertainty, and rigid adherence to the tempo established at the beginning of each movement produced a certain monotony. These shortcomings were less evident in the concerto, because here the soloist, to a certain extent, took the place of the conductor. However, the experiment will be watched with interest, especially when less familiar or new works are performed.

NOVELTIES. The following list includes the more important novelties heard during the year: Boston Symphony Orchestra, under Kussevitzy: I. Stravinsky, *Edipus Rex*, a two-act operatorio without scenery or action, with the assistance of the Harvard Glee Club, Matzenauer, Hackett, and Gange (February 24); Walton, *Sinfonia concertante* (March 18); Lopatnikov, *Scherzo* (April 27); Z. Kodaly, Suite from *Hary Janos* (October 12); J. Ibert, *Féerie* (October 26); E. Bloch, *America, an Epic Rhapsody* (December, 20).—New York Philharmonic Orchestra, under Toscanini: M. Ravel, *Daphné et Chloé*, Suite No. 2 (February 16); I. Pizzetti, *La pisanella* (March 4); F. Busoni, *Rondo Arlequin* (March 15); under Mengelberg: B. Wagenaar, *Symphony No. 1* (October 7); E. Whithorne, *Fata Morgana*, symphonic poem (October 11); G. F. Handel, Suite from *Alcina* (October 11); S. Bucharoff, *Two Tone Poems* (November 1); G. Cassado, *Rapsodia Catalonia* (November 11); K. Atterberg, *Symphony No. 6*, in C (November 21); O. Respighi, *Toccata* for piano and orchestra (the composer at the piano, November 28); A. Tansman, *La Nuit Kurde*, suite (December 27); R. Strauss, *Die Tageszeiten* for male chorus and orchestra (December 27); under Beecham: G. F. Handel, Overture to *Teseo*, Musette from *Pastor Fido* and Bourrée from *Rodrigo* (January 12); under Damrosch: G. Gershwin, *An American in Paris* (December 13); E. Bloch, *America, an Epic Rhapsody* (December 20).

New York Symphony Orchestra, under Damrosch: G. Holst, *Edgdon Heath*, symphonic poem (February 12).—Beethoven Symphony Orches-

tra, under Zaslavsky: P. James, *Overture to a Comedy* (January 13); E. Berckman, *Au bord de l'étoile matutin* (February 17); G. Liebling, Introduction to the opera *The Children of Truth* (March 9); H. Johnson, *Hindu Sketches* (April 13).—San Francisco Symphony Orchestra, under Hertz: F. Warnke, *A New Symphony in an Older Style* (March 2); E. Bloch, *America, an Epic Rhapsody* (December 20).—Philadelphia Symphony Orchestra, under Monteux: W. Pijper, *Symphony* (February 17); under Stokowski: A. Roussel, *Concert pour petit orchestre* (October 5); L. Knipper, *Legend of a Plaster God* (October 12); Szostakowicz, *Symphony*, op. 10 (October 12); A. Roussel, *Concerto for piano and orchestra* (Lucie Caffaret at the piano, November 16); under Gabrilowitsch: E. Bloch, *America, an Epic Rhapsody* (December 20); E. Korngold, *Suite from Much Ado about Nothing* (December 21).—Chicago Symphony Orchestra, under Stock: A. Noelle, *Suite for Strings and Kettle drums* (March 23); M. La Violette, *Penetrella*, tone poem for strings (November 30); E. Bloch, *America, an Epic Rhapsody* (December 20).—Cleveland Symphony Orchestra, under Sokolov: F. Schubert, *Symphony in E* (November 22).—Seattle Symphony Orchestra, under Krueger: E. Potjes, *Intermezzo from the opera, Le Coffret de Salomé* (January 31).

OPERA. At the Metropolitan Opera House in New York, 197 performances were given from a repertory of 52 operas by 30 composers. According to nationality, these were divided as follows: Italian, 23 works by 12 composers totaled 97 performances; German, 15 works by six composers totaled 51 performances; French, 10 works by eight composers totaled 32 performances; Russian, two works by two composers had eight performances (in French); one Bohemian opera was given twice (in German) and one American opera five times. Wagner, represented by nine works, stood first with 34 performances. Next came Puccini with 33 performances of seven works, while Verdi fell behind with only 21 performances of six works.

The first novelty was Alfano's *Madonna Imperia* (February 8), under Serafin, with Mueller, Wolfe, and Jagel in the principal rôles. The dull, colorless score, devoid of characterization and climaxes, left the audience apathetic. A real success was Puccini's *La Rondine* (March 10), under Bellezza, with Bori, Fleischer, Gigli, Tokatyan, and Ludikar. The natural, spontaneous melodies, heightened by masterly instrumentation, made an immediate appeal. Less fortunate was the choice of Respighi's *Campana Sommersa* (November 24), under Serafin, with Rethberg, Guilford, Marinelli, and De Luca. The text, following closely Hauptmann's play, offers excellent opportunities for musical treatment, which the composer failed to utilize. The music does not differentiate the human and the fairy elements. The orchestra, instead of interpreting, merely supports the voice. The melodies, often pleasing, lack distinction. There are frequent suggestions of Puccini and Strauss.

The novelty most eagerly awaited, because of the fame of the composer, was Richard Strauss' *Die ägyptische Helena* (November 6), produced on a lavish scale, under Bodanzky, with Jeritzka, Fleischer, Telva, Laubenthal, and Whitehill. For more than three decades every Strauss première has been a brilliant outward success and this, his ninth opera, was no exception. Sov-

ereign craftsmanship, an unflinching instinct for dramatic characterization, and the magical splendor of the orchestration naturally carry away the superficial listener. However, a closer examination of the score discloses the fact that these admirable qualities cannot compensate for the lack of real inventive power, spontaneity and genuine inspiration. The fundamental defect, one that foredooms the work to failure, is the absurd and unintelligible text by Hugo von Hofmannsthal. In spite of this handicap, Strauss has succeeded in writing passages of haunting beauty, but these invariably are reminiscent of the composer's own symphonic masterpieces of his earlier years.

Of the new artists, a German soprano, Gertrude Kappel, received a veritable and well-merited ovation on the occasion of her début as Isolde (*Tristan und Isolde*, January 16). The other singers, all valuable acquisitions to the company, were Grace Moore (as Mimi in *La Bohème*, February 7), Grace Devine (as the Musician in *Manon Lescaut*, November 1), Aida Doninelli (as Priestess in *Aida*, November 2), Jane Carroll (as Da-ud in *Die ägyptische Helena*, November 6), Clara Jacobo (as Leonora in *Trovatore*, November 8), Pearl Besuner (as Siebel in *Faust*, December 1).

The Chicago Civic Opera gave in its home town 95 performances of 39 operas by 27 composers. According to nationality, these were distributed as follows: Italian, 19 works by 10 composers totaled 45 performances; French, 10 works by nine composers totaled 29 performances; German, eight works by six composers totaled 16 performances. Russia and America were represented each by one work. In the opening opera of the season, *Carmen* (October 31) three new singers made their début, Maria Olaszewska in the title-rôle, Alice Mock as Micaëla and Ada Paggi as Mercedes. The other débutantes were Marian Claire (as Mimi in *La Bohème*, November 1), Eva Turner (as Aida, November 3), Hilda Burke (as Aida, November 10) and Coe Glade as Amneris on the same night, Margherita Salvi (as Rosina in *Il Barbiere di Siviglia*, December 6), Frieda Leider (as Brünnhilde in *Die Walküre*, December 8). Of these, the latter recognized in Germany as one of the greatest of the younger generation of Wagner interpreters, aroused boundless enthusiasm and thus created a general demand for the inclusion of more of the master's works in the repertory. The season resulted in a heavy deficit of \$450,000 which swallowed up 90 per cent of the guarantee fund. In spite of this, the company acquired a new site for a permanent opera house and construction was begun toward the end of the year. No novelties were produced.

From modest beginnings, the Philadelphia Civic Opera Company advanced step by step to more ambitious undertakings, reaching their culmination with a splendid production of *Die Walküre* (February 23), under Alexander Smallens with Florence Austral singing Brünnhilde as guest. On November 1, they gave the American première of Richard Strauss' *Ariadne auf Naxos*.

The outstanding productions of the Pennsylvania Grand Opera Company, of Philadelphia, were the American première of Mussorgsky's *Chovantchina* (April 18) and a revival of Rubinstein's *Der Dämon* (November 7), both under Fabian Sevitzyk.

Another American première was Vaughan Williams' *Hugh the Drover* (February 21) by the Washington National Opera Company. More important was the celebration of the tenth anniversary of its foundation by a two weeks' operatic festival (in February), the outstanding features of which were the productions of *Tristan und Isolde* and *Die Walküre*, under Ernst Knoch, with Gadski, Alsen, and Knote as guests.

During the summer season at Ravinia Park, Chicago, 72 performances were given from a repertory of 28 operas, among them two local premières, Rabaud's *Marouf* (August 1) and Ravel's *L'Heure espagnol* (August 17). A new feature was the introduction of Sunday afternoon symphony concerts by the Chicago Symphony Orchestra, under Eric Delamarter.

San Francisco and Los Angeles enjoyed a short season of grand opera (September 15–October 15), under the direction of Gaetano Merola, with a company of principals from the Metropolitan and Chicago companies.

At Smith College, Northampton, Mass., Professor Werner Josten, with artists recruited from the faculty and students of the college, gave the American premières of Monteverdi's *Combattimento di Tancredi e Clorinda* and Handel's *Xerxes* (May 12).

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J. Wolgast, *Karl Straube: Eine Würdigung seiner Musikerpersönlichkeit* (Leipzig), a worthy tribute to a great artist.

HISTORY. E. J. Dent, *Foundations of English Opera* (London), a valuable study of the period 1650–1700, concluding with the works of Purcell. G. T. Edwards, *Music and Musicians of Maine* (Portland), only of local interest. N. F. Findeisen, *The Outlines of the History of Music in Russia from the Earliest Times to the End of the 18th Century* (Moscow and London, vol. i), in Russian and English, treats of the music of the Scythians, Sarmatians, Volga Bulgars, and folk songs of the heathen Slavs. The work, by far the most important history of Russian music, is the result of 40 years of unceasing, painstaking research on the part of Russia's foremost musicologist. To appear in seven volumes. C. Gray, *The History of Music* (London), stresses the influence of music in the development of civilization, but advances startling, generally disparaging, estimates of great masters. J. Jeannin, *Rythm grégorien* (Lyons), a scholarly, but not convincing, attack upon the researches of Dom Mocquereau. G. R. Hayes, *Musical Instruments and their Music* (1500–1750, Oxford). L. de Laurencie, *Les Luthistes* (Paris). A. Lorenz, *Abendländische Musikgeschichte im Rhythmus der Generationen* (Berlin), conceives the development of music as influenced by alternating periods of polyphony and homophony. A. Machabey, *Histoire et Evolution des Formules musicales du 1er au 15me siècle de l'ère chrétienne* (Paris), an attempt to prove that the major mode originated and was developed in France before 1450. S. Mackinlay, *Origin and Development of Light Opera* (Philadelphia), a history from the earliest times to the present day. M. Pincherle, *Feuilletons d'histoire du Violon* (Paris), a valuable collection of essays on great violinists. V. Riesemann, *Geschichte der russischen Musik* (Leipzig), an amplification rather than a translation of L. Sabanieiev's work. V. Uspensky and V. Belaiev, *Turcoman Music* (Moscow), a collection of 115 pieces, with historical notes and technical analysis, very important as a pioneer work in an entirely unknown field of music. R. Van Aerde, *Les ancêtres flamands de Beethoven* (Malines), establishes on the strength of authentic documents that the composer's grandfather was a native of Malines.

CRITICISM, AESTHETICS. W. Bardas, *Zur Psychologie der Klaviertechnik* (Berlin). E. Blom, *The Limitations of Music* (London), attempts to establish fixed boundaries, beyond which music, as an art, cannot go. R. Capell, *Schubert's Songs* (London), excellent analyses of the individual songs, with much valuable information regarding the minor poets of the texts. A. Cœuroy, *Panorama de la musique contemporaine* (Paris), observations from the viewpoint of an admirer of modernistic tendencies. T. F. Dunhill, *Sullivan's Comic Operas: A Critical Appreciation* (London), a sympathetic study. K. G. Fellerer, *Die Deklamationsrhythmik in der vokalen Polyphonie des 16 Jahrhunderts* (Düsseldorf), a study of the relations between word stress and musical accent. R. Imhofer, *Grundriss der musikalischen Ästhetik* (Leipzig), an exposition of recognized fundamental principles. H. John, *Goethe und die Musik* (Langensalza), based on the poet's correspondence with Zelter. R. Josz, *Essai d'une théorie de l'évolution de l'art*

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CORRESPONDENCE. S. A. Dianin, *Borodin's Letters*, vol. i. (Moscow) contains 186 letters from 1857-71, very valuable for new information regarding Russian music of that period. G. Adami, *Giacomo Puccini: Epistolario* (Milan), interesting letters to his publishers and librettists. H. Werner, *Hugo Wolf und der Wiener akademische Wagnerverein* (Ratisbon), contains many hitherto unpublished letters.

See SCHUBERT CENTENARY.

MUSSOLINI, BENITO. See ITALY, History.

MUTATION. See ZOÖLOGY.

MUTTON. See LIVESTOCK.

NANKING. See ARCHITECTURE; CHINA.

NATAL, ná-tál'. An original province of the Union of South Africa. See SOUTH AFRICA, UNION OF.

NATIONAL ACADEMY OF DESIGN. See ART EXHIBITIONS.

NATIONAL ACADEMY OF SCIENCES. A body of American scientists incorporated by Act of Congress approved by President Lincoln in 1863, for the purpose of investigating, examining, experimenting, and reporting upon any subject of science or art, when called upon by any department of the Government, the actual expense of such investigations, examinations, experiments, and reports, to be paid from appropriations made for the purpose without compensation for any services to the Government. The membership is limited to 250 active members, and 50 foreign associates. New members are elected by the Academy on nominations from its 10 sections: Mathematics, astronomy, physics, engineering, chemistry, geology and palæontology, botany, zoölogy and anatomy, physiology and pathology, anthropology and psychology. Nine new members were elected in April, 1928, as follows: John August Anderson, William Mansfield Clark, Arthur Keith, Charles Franklin Kettering, Alfred Kroeber, Rudolph Ruedemann, Philip Anderson Shaffer, George Malcolm Stratton, and Lewis Madison Terman. One additional foreign associate was elected: Sir Robert A. Hadfield, London, England.

The Academy holds two meetings each year: The annual meeting, held in Washington beginning the fourth Monday in April; and the autumn meeting, held at a place and on dates decided upon by the Council of the Academy. The 1928 autumn meeting was held in November, at Schenectady, N. Y. These meetings are devoted to the transaction of business and the presentation of scientific papers by Academicians or persons introduced by them.

The Academy has trust funds which grant money for the furtherance of research investigations and other trust funds which provide for

gold medals in recognition of outstanding scientific work. At the meeting in April, 1928, the Henry Draper Medal was awarded to William Hammond Wright, a member of the Academy, for his researches on Nebulæ, new stars, and planetary atmospheres. The Agassiz Medal for Oceanography was awarded to Vagn Walfrid Ekman, of the University of Lund, Sweden, in recognition of his work in physical oceanography. The Public Welfare Medal was awarded to Dr. Charles V. Chapin of the Department of health, Providence, R. I., for his contributions to public health and work in the administrative control of disease. The Mary Clark Thompson Medal and accompanying honorarium of \$250 were awarded to Dr. James Perrin Smith, a member of the Academy, in recognition of his accomplishment in palæontology of Triassic.

The Academy publishes a series of memoirs, consisting of monographs by academicians and others, and reports of investigations conducted for the Government; also *Biographical Memoirs* of the deceased members. *Proceedings*, issued monthly, is devoted to condensed reports of the most recent scientific discoveries. The officers in 1928 were: T. H. Morgan, president; Frederick E. Wright, vice president; R. A. Millikan, foreign secretary; David White, home secretary, Joseph S. Ames, treasurer. The headquarters are at B and 21st Streets, Washington, D. C.

NATIONAL BANKS. See BANKS AND BANKING.

NATIONAL CIVIC FEDERATION, THE. An educational movement, organized in 1900, seeking the solution of some of the great problems related to social and industrial progress, providing especially for the discussion of questions of national import, aiding in the crystallization of the most enlightened public opinion and promoting legislation when desirable. The executive committee represents the public, employers, and wage-earners, and various other committees and departments are organized to conduct the activities of the Federation.

The Department of Industrial Relations, with William D. Baldwin as chairman, has for its general purpose the seeking of a *modus vivendi* between employers and wage-earners, to the end that such friction and misunderstanding as exist between them may be reduced to a minimum. While not organized solely to deal with problems of capital and labor, the Federation, since its inception, has sought to bring together employers and wage-earners for the discussion of questions responsible for bitterness between the two great forces which logically should be working together. The Department on Active Citizenship, with John Hays Hammond as chairman, continued its campaign to interest citizens in participating actively in their political party organizations, not only in enrolling and voting at primaries and elections, but by aiding in the selection of reputable and efficient candidates. To that end, the Department called a conference in April, 1928, attended by representatives of more than thirty national organizations, who were urged to call upon their local units, numbering more than 200,000, with a membership of more than 10,000,000 adult citizens, to observe their civic duty at primaries and elections. The department also extended its programme in an effort to interest the 7,000,000 men and women who cast their first presidential votes in 1928.

The Industrial Welfare Department, with Charles L. Edgar as chairman, which is an educational movement to secure improvements in working and living conditions of wage-earners voluntarily by employers, advocated a proposal for retirement annuities designed to provide economic security for the wage-working population against destitution in old age and issued a practical guide for an economically sound solution of the old-age-pension problem. It also made an exhaustive report upon the extent of old-age dependency, and turned its attention to studying efforts for the prevention and relief of destitution in old age. The Committee on Subversive Activities carried on its programme of opposition to recognition of the Soviet Government and upheld the policy of the Wilson, Harding, and Coolidge administrations against such recognition.

The Woman's Department, with Miss Maude Wetmore as chairman, through its committee on education, studied the intimate relation of chemistry to human lives; made a survey of illiteracy among adults and a constructive inquiry into the place in curricula of public-school systems given to the human-service quality of scientific research; the department also considered a re-codification of the naturalization laws and endorsed restrictive legislation. It made a survey of American almshouses in four leading States and issued a comprehensive report upon conditions found and made recommendations which aimed to bring about improvements in this type of institution, which it pronounced an absolute social necessity. Its findings included the following: Intelligently organized outdoor relief would minimize the problem; specialized institutions for the care and treatment of certain pathological conditions would divert phases of it into other channels, although there would inevitably remain an element which, while not requiring specialized treatment, must have some sort of custodial care; and State old-age pensions would not alter this aspect of indigency because of the patent incapacity of that element for meeting its own needs.

The Executive Council of the Federation for 1928 included the following: Elihu Root, honorary president; Matthew Woll, acting president; Samuel McRoberts, treasurer; W. N. Doak, secretary, Ralph M. Easley, chairman executive council; Miss Maude Wetmore, chairman woman's department; Charles L. Edgar, chairman welfare department; Conde B. Pallen, chairman department on subversive activities; Archibald E. Stevenson, chairman committee on free speech; John Hays Hammond, chairman department on active citizenship; William D. Baldwin, chairman department on industrial relations; Marcus M. Marks, chairman industrial round-table department; Jeremiah W. Jenks, chairman department on current economics; Gertrude Beeks Easley, secretary executive council; Mrs. Coffin Van Rensselaer, executive secretary; and Peter J. Brady, secretary department on active citizenship. The headquarters are in the Metropolitan Tower, East 23rd Street, New York.

NATIONAL DEFENSE. See **MILITARY PROGRESS**; **NAVAL PROGRESS**.

NATIONAL EDUCATION ASSOCIATION OF THE UNITED STATES. An organization of persons actively engaged in educational work and others interested in education; organized at Philadelphia, Aug. 26, 1857, under the name

of the National Teachers' Association, and on June 30, 1907, incorporated by Congress under its present name. In July, 1920, at the annual meeting, the association was reorganized and provision was made for a representative assembly composed of delegates from State and local education associations. The other governing bodies are a board of directors; an executive committee of five; a board of trustees; departmental organizations; standing and special committees; and a staff at headquarters which is held responsible for carrying out the decisions of the governing bodies. In 1928 there were 18 departments, each having its own officers, and more than 20 committees actively at work on professional problems. Two conventions are held annually. The summer meeting serves as a clearing house for educational ideas and reviews the progress of the year in education. At this time, in addition to the general sessions, meetings of the representative assembly, the departments of the association, and a number of allied organizations are held. In 1928 this meeting was held at Minneapolis, Minnesota, July 1-6, with an estimated total attendance of more than 10,000. The 1929 summer convention was scheduled to meet in Atlanta, Georgia, the first week in July. The department of superintendence holds a winter convention the last week in February of each year. The 1928 meeting was in Boston, Mass.; that for 1929 was to be held in Cleveland. The department was planning to complete in 1929 a two years' study of the articulation of the units of American education. Material used in this study was gathered from schools and colleges in every section of the United States.

The chief objective of the association is to secure from the American public a broader recognition of education and, through a legislative programme, to provide for increased educational opportunities for American children. The association advocates a Department of Education with a secretary in the President's cabinet; a competent, well-trained teacher in every public school position in the United States; increased facilities for teacher training; continued investigation of educational problems as the basis for revised educational standards and methods; and active assistance to State and local affiliated associations in securing needed legislation and in promoting the interests of such associations.

The association's monthly *Journal*, established in 1921, supports the policies and programmes of the association, aims to reflect the activities of professional organizations, and gives special consideration to new movements in education of national and international interest. The association publishes an annual volume of *Proceedings* and numerous reports on its activities. *Research Bulletins* containing statistical information on educational subjects are issued regularly. The finances of the association are embodied in two funds, the current and the permanent, the latter amounting to \$433,828.60 on May 31, 1928, the receipts for the year ending on that date having been \$439,842.93. The enrollment on Jan. 1, 1928, was 181,350. The headquarters of the association are maintained at 1201 Sixteenth Street, Northwest, Washington, D. C. Officers elected for 1928-29 were: President, Uel W. Lamkin, Maryville, Mo., secretary, J. W. Crabtree, Washington; and treasurer, Henry Lester Smith, Bloomington, Ind.

NATIONAL SAFETY COUNCIL. An international, non-profit coöperative association of more than 4000 members, companies, and individuals located in the United States and abroad. Formed as a result of a safety congress held in Milwaukee in 1912 under the auspices of the Association of Iron and Steel Electrical Engineers, it functions for the prevention of accidents in factories, in the streets, air, schools, and homes, as well as for the health, sanitation, and general welfare of the public at large. There were 59 local councils throughout the United States in 1928, and intensive safety work was carried on in hundreds of local plants, embracing approximately 150 different lines of modern industry, which resulted in bringing industrial safety work directly to nearly 10,000,000 workers. In addition to this work, a campaign was carried on in the schools, the homes, and other public places, and among municipal officers in charge of safety on the public thoroughfares.

The educational division of the council, located in New York, receives financial support from the National Bureau of Casualty and Surety Underwriters and maintains a trained staff who devote their entire time to serving the schools of the nation and teaching accident prevention fundamentals. The council maintains a large publication service which includes four monthly publications; the *National Safety News*, for industry; *Public Safety* for public officials, police chiefs, etc.; *Safety Education* for the schools; and the *Safe Worker*, which is distributed each month to thousands of workers throughout the country. Other features of the publication service are the industrial practices pamphlets issued annually; the intensive work carried on by the 28 different sections represented in the industrial divisions, where new ideas, new plans, and new practices are exchanged between members; the annual safety calendar, 650,000 of which were distributed during 1928; and forty different two-color posters, designed, printed, and distributed each month.

The activities of the council are supported from income supplied by members and, in the industrial division, all pay dues proportionate to their size. The annual income amounted to approximately \$600,000 in 1928. The council also receives financial contributions from the Rockefeller Foundation in addition to its list of paid memberships. The Seventeenth Annual Safety Congress was held in New York in October, with an attendance of approximately 6000 delegates. Officers for 1929 were elected as follows: President, Henry A. Reninger, Allentown, Pa.; managing director, W. H. Cameron, Chicago; treasurer, G. T. Hellmuth, Chicago; vice presidents; for public relations, Charles E. Hill, New York; for local councils, George Opp, Detroit; for public safety, Miller McClintock, Cambridge, Mass.; for health, Professor C. E. A. Winslow, New Haven, Conn.; for membership, A. M. Tode, New York; for engineering, George Sanford, Schenectady, N. Y.; for finance, C. E. Pettibone, Boston; for education, Albert W. Whitney, New York; for industrial safety, E. W. Beck, New York. The executive offices are in charge of William H. Cameron, managing director, 108 East Ohio St., Chicago, Ill.

NAVAL PROGRESS. One of the most important matters concerning naval progress during the year 1928 was the Anglo-French Naval

Agreement. For some weeks the terms of the agreement were not made public. In September, the League of Nations Assembly and Council instructed its Preparatory Commission for a Disarmament Conference to keep in touch with the progress of negotiations between the chief naval powers in order to call that committee together at the earliest favorable opportunity. France and England thereupon agreed to present their agreement to the United States Government and ask its opinion upon it as a basis for further discussion of naval armament limitation. This was done. After receipt of the agreement and suitable study, the United States sent identical replies to both nations rejecting the Anglo-French scheme. A summary of the Anglo-French proposals as given in the United States note is as follows:

"The limitations which the Disarmament Conference will have to determine will deal with four classes of men-of-war.

"(1) Capital ships, i.e., ships of over 10,000 tons or with guns of more than 8-inch calibre.

"(2) Aircraft carriers of over 10,000 tons.

"(3) Surface vessels of or below 10,000 tons armed with guns of more than 6-inch, and up to 8-inch, calibre.

"(4) Ocean-going submarines over 600 tons."

The American note called attention to the fact that the Washington Treaty regulated the first two classes and that all the Preparatory Commission would have to consider would be cruisers of 10,000 tons or less armed with guns of 6-inch to 8-inch calibre. It restates the position of the United States which has held and still holds that effective limitation of naval armament should apply to all classes of combatant vessels; while the 1928 proposals provided no limitation on 6-inch-gun cruisers, or destroyers, or submarines of 600 tons or less, although these vessels were certainly of high offensive value, especially to any nation possessing well-distributed naval bases in various parts of the world—the unrestricted cruisers alone constituting the greater part of the world's fighting ships. Moreover, the limitation of the larger cruisers carrying guns of over 6-inch calibre would add enormously to the comparative offensive power of a nation which possesses a large tonnage of merchant vessels suitable to serve as auxiliary cruisers in time of war.

The note referred to the British proposals in the conference of 1927 limiting the larger cruisers and placing the limit so high as to be no limitation at all. It said that the old proposals were "now presented in a new and even more objectionable form" and, as it proposes a limit to those cruisers which the United States needs, while frankly removing the limit on cruisers which she does not need in any great number, "it is even more unacceptable" than the British proposals of 1927. As regards 600-ton submarines, they are formidable combatant vessels. They carry the same torpedoes as the larger ones and can mount 5-inch guns.

Much that has been said concerning class three applies with equal or greater force to class four. The United States would be willing, in conjunction with all nations of the world, to abolish submarines. Otherwise, their total tonnage should be given a reasonable limit. The note concludes with expressing the willingness of the United States to coöperate with all naval powers for real limitation and suggests as a

basis the scheme formerly proposed by France, by which nations may "vary the percentage of tonnage in classes within the total tonnage" allotted and so provide for their particular requirements.

A full review of the acts of the Naval Conference at Gexena in 1927 is given in the YEAR BOOK for 1927 at the beginning of the article on NAVAL PROGRESS.

The development and incidents in the navies of the world during 1928 and the general condition of the important navies at the end of the year are given in the following sections.

NAVIES OF THE WORLD IN 1928

ARGENTINA. The appropriation for new construction of the programme of 1926 was, as stated in the YEAR BOOK of 1927, 75,000,000 pesos (1 peso = \$0.424) which was to be spread over 10 years. According to later information, 35,000,000 pesos was to be spent in the first three years, 20,000,000 in the second three years, and 20,000,000 in the last four. The two cruisers *Admirante Brown* and *Veinticinco de Maio*, described in the 1927 YEAR BOOK, were building at the yards of Orlando, Leghorn, and Odero, Sestri Ponente. The displacement had been fixed at 6800 standard tons. Three destroyer leaders of 1800 tons were under construction at the yard of J. S. White & Co., Cowes, England; one, the *Mendoza*, was launched on July 18, 1928. These vessels were to have a length over all of 335 feet and a molded breadth of 31.75 feet. The armament was to consist of five 4.7-inch guns, three anti-aircraft guns (one 3-inch, two 0.4-inch), and six 21-inch torpedo tubes on triple mounts. Three submarines were ordered in Italy at the Tosi works, Taranto. They were to be similar to the Italian boats of the *Goffredo Mameli* type. The length is 213.25 feet and beam, 21.25 feet; displacement when submerged, 990 tons—when on the surface, 780 tons; corresponding speeds, 9 and 17 knots; motive power, two Diesel 8-cylinder engines of 3000 h.p.; armament, one 3-inch gun, and six 21-inch torpedo tubes. The gunboat, *San Juan*, designed especially for surveying duty, was completed at the works of Hawthorn, Leslie, & Co., Hebburn-on-Tyne, England, during the spring of 1928, and a sister boat was then under construction. These vessels have a length of 200 feet and a displacement of 760 tons; horse power, 760; speed, 12 knots; and a steaming radius of 4000 miles.

AUSTRALIA. The two 10,000-ton cruisers, *Australia* and *Canberra*, were completed in England early in 1928. The submarines, *Orcay* and *Oxley*, were completed several months earlier but were held at Malta for eight months on their way to Australia in order to repair defects which developed in their machinery. The only naval vessel of importance under construction for the Australian Government at the end of 1928 was the aircraft carrier, *Albatross*, which was completing at the Cockatoo Island dock yard where it was launched on Feb. 23, 1928. It was to be ready for service in January, 1929. It is driven by turbines of 12,000 h.p.; designed speed, 20 knots; armament, four 4.7-inch guns; complement, 400 officers and men.

BRAZIL. The large submarine ordered in Spezia, Italy, in 1926, was launched in July, 1927, and named *Humayta*. Its dimensions are: length, 282 feet; beam, 25.5 feet; displacements, submerged and surface, 1884 and 1390 tons; corresponding speeds, 9.5 and 18.5 knots; arma-

ment, one 4-inch anti-aircraft gun and six 21-inch torpedo tubes. It has a tube aft for mine laying and is fitted for carrying 16 mines. It is similar in general design to the *Balilla* class of the Italian Navy.

CANADA. The head of the Canadian Navy is the Director of the Naval Service, one of the branches of the Ministry of National Defense. The Personnel of the navy in 1928 consisted of 70 officers and 500 men in the active force; 70 officers and 430 men in the naval reserve; and 70 officers and 830 men in the naval volunteer reserve. Seven officers and 26 petty officers and men were lent by the British Navy. Some changes in the figures were in contemplation in order to man the two new destroyers under construction in England; part of the changes consists in the addition of 10 extra officers and 150 petty officers and men to the active force. The new destroyers were designed to replace the destroyers, *Patriot* and *Patrician*, of 1004 tons, which were more than 23 years old. In the meantime, the Admiralty proposed to lend the destroyers, *Torbay* and *Toreador*, of 1075 tons, and of slightly later type.

CHILE. All of the six new destroyers referred to in the YEAR BOOK for 1927 had been launched: *Serrano*, Jan. 25, 1928; *Ovella*, March 8; *Riquelme*, May 31; *Hyatt*, July 21; *Capitan O'Brien*, October 2; *Videla*, October 16. The displacement is 1090 standard tons and 1430 tons at full load; the length is 300 feet over all; beam, 29 feet; draught at full load, about 12.7 feet. The armament consists of three 4.7-inch guns, one 3-inch anti-aircraft gun, six 21-inch torpedo tubes on triple mounts, a Y-gun for depth charges, and a mining equipment. The trials of the *Serrano* were completed and the contract speed of 35 knots slightly exceeded. Modernization of the battleship, *Almirante Latorre* (completed 1914), was contemplated.

FRANCE. The naval budget for 1929 as submitted to Parliament was 2,960,111,513 francs (about \$113,000,000), 500 millions more than the amount appropriated for 1928. Of this sum, 125 millions was designed for the commencement of work on the vessels of the 1929 programme, which are as follows: one light cruiser of 10,000 tons; six destroyer leaders of 2800 (or more) tons; six cruising submarines similar to those laid down in 1927-28 (displacements 1570-2000 tons); one submarine mine layer; two gunboats of about 750 tons; two oil fuel ships. Modernization of the battleships of 23,000 tons was to be completed by the work in progress on the *Jean Bart* and the *Paris*.

The most important change in the French Navy during the year 1928 concerned naval aviation. For three or four years, apparently, French Army and civil aviation had been deteriorating. During this time, great efforts were made to enlarge and improve naval aviation and these efforts were beginning to bear fruit. But political and civil criticism of the general condition of military, naval, and civil aviation led to the sudden passing of a law establishing an air ministry to control all air forces. The final argument of the supporters of the bill was that the greater part of the aviation records once held by French aviators had been lost to those of other nations—largely Italians—of which the French were very jealous. The new Air Ministry had not yet been fully organized and its effect upon naval aviation could not be measured but, judging from British experience, it was not likely to

he satisfactory. The allotment to naval aviation in the budget for 1929 was about 60 per cent greater than that appropriated for 1928. Four new squadrons were to be organized, new bases and regional depots built, and the supply of equipment for war service largely increased.

The authorized personnel of the navy is given in full detail in NAVAL PROGRESS in the YEAR BOOK for 1927. The budget of the year authorized an increase of one vice admiral, one rear admiral, two captains, seven commanders, and 500 enlisted men. The anticipated enlisted force of 57,500 was to be divided as follows: On cruising vessels, 40,100; on shore duty, on harbor vessels, in schools, etc., 11,100; in aviation, 6300. During 1928, much attention was directed to naval schools, particularly to the new naval academy under construction and reorganization at Brest, to schools for line and engineer officers, and to schools and instruction for officers of the reserve.

WARSHIPS BUILDING FOR FRANCE

Name	Jan. 1, 1929	Condition
Light cruisers:		
<i>Suffren</i>	10,000	Nearly complete
<i>Colbert</i>	10,000	Laid down Apr. 2, '28
<i>Louvois</i>	10,000	Laid down June, '28
<i>C-3</i>	10,000	Laid down Sept., '28
<i>C-4</i>	10,000	Authorized
Aircraft tender:		
<i>Comdt. Teste</i>	10,000	Laid down Aug., '27
Mine layer:		
<i>Pluton</i>	5,600	Laid down Apr., '27
Subm. depot ship:		
<i>Jules Verne</i>	6,000	Laid down 1928
Schoolship:		
	6,600	Ordered 1928
Gunboats:		
1	750	Building
2	750	Authorized
Destroyer Leaders:		
3 of <i>Lion</i> class	2,690	Launched 1928
3 of <i>Vanben</i> class	2,780	Laid down 1927
<i>D-4</i> to <i>D-9</i>	2,780	Ordered 1928
<i>D-10</i> to <i>D-15</i>	2,900	Authorized
2 of <i>Basque</i> class	1,495	Nearly complete
4 of <i>Forbin</i> class	1,600	2 launched; 2 bldg.
Fuel Ships:		
<i>Mekong</i>	15,500	Launched Aug. 31, '28
<i>Niger</i>	15,500	Building
Submarines:		
<i>Surcouf</i>	3250/—	Laid down July, '27
6 of <i>Pascal</i> class	1530/2000	4 launched; 2 bldg.
6 of <i>Monge</i> class	1570/2000	All building
6 of new class	About same	Authorized
3 of <i>Saphir</i> class	980/625	2 launched; 1 bldg.
4 of <i>Diane</i> class	790/625	Laid down 1927
4 of new class	About same	Authorized

The vessels completed in 1928 consisted of two light cruisers of 10,000 tons, two or three destroyer leaders of 2600 tons, seven destroyers of 1460 to 1495 tons, fuel ship of 9900 tons, four or five small submarines of about 600 tons, and one gunboat.

GERMANY. The naval budget had been increasing for many years. In 1924, the amount was 104,200,000 marks (1 mark = 23.8 cents); in 1928 the budget had expanded to 210,000,000 marks. According to statements in the British and French press, the budget was so drawn that no one could tell precisely what it meant. About one-half the appropriations are "provisional," which means that they may be applied to any other purpose than that for which they are voted. Furthermore, it appears that the allotments are excessive. Thus, the estimated cost of one of the new 10,000-ton ships is 80 million marks (\$19,040,000), at least three times the cost in France; the cost of the nine 6-inch and three 3.4-inch guns of the cruiser, *Karlsruhe*, is set at 14,500,-

000 marks (\$3,451,000). While the cost in France, according to French estimates, would be less than \$800,000.

The organization of the German Navy seemed to be planned for building, maintaining, and operating a great force such as was possessed before the World War. The naval general staff is composed of 17 sections, each headed by an officer of rank and having several juniors. The bureaus into which the navy department is divided are maintained on a similar scale. The excessive proportion of officers and senior petty officers (4979) to that of the remainder of the enlisted force (9035) was noted in the YEAR BOOK for 1927 as a probable indication that the Government was planning for a comparatively large navy when the treaty restrictions were removed or sufficiently modified. Late reports indicated a reduction of the number of officers and officials on the active list. It was said that while the others had been transferred to the reserve, many of them are actively employed. In view of the foregoing remarks, the use to which the surplus of the "provisional" appropriations were to be put was the cause of much comment in England and France.

The active list of officers for the navy in the executive branch consists of one admiral, three vice admirals, eight rear admirals, 39 captains, 24 commanders, 85 lieutenant commanders, 164 lieutenants, and 200 junior lieutenants and ensigns; the list of engineer officers comprises one rear admiral, four captains, four commanders, 19 lieutenant commanders, 44 lieutenants, 55 junior lieutenants, and 27 ensigns. The medical corps had four officers of a grade corresponding to rear admiral. The members of the pay, construction, and legal departments are officials and not officers. All officers, officials, and enlisted men are volunteers; the term of service of enlisted men is 12 years.

The vessels under construction for the German Navy consisted of one new-type, armored cruiser of 10,000 tons, the light cruisers, *Konigsberg*, *Koln*, and "*E*" of 6000 tons, and the destroyers *Illis*, *Wolf*, *Tiger*, *Luchs*, *Jaguar*, and *Leopard*—all of 800 tons. The light cruiser, *Karlsruhe*, 6000 tons, was reported as having been completed late in 1928; and the *Konigsberg* should be ready early in 1929. The *Koln* was launched May 20, 1928, and was to be completed in 1929; cruiser "*E*" was on the docks at Kiel. The destroyers, *Illis* and *Wolf*, launched in October, 1927, were undergoing their trials and were reported as practically complete. The other four destroyers were to be completed early in 1929. A torpedo boat of about 200 tons should have been completed, but, as it was of a more or less experimental type, the work might be delayed. The new "*Ship A*" is of a new type. According to semi-official reports, she was to be of the cruiser class and possess considerable armor protection; would be superior in offense and defense to all cruisers of 10,000 tons so far designed; and have sufficient speed to escape contact with more powerful ships. The armament was to consist of six 11-inch Krupp guns of a new type (range of over 39,000 yards) and several anti-aircraft guns and torpedo tubes. The propelling machinery would consist of Diesel engines of special type and great power; the anticipated speed had not been disclosed.

GREAT BRITAIN. The British naval budget for 1928-29 amounted to £57,300,000, a reduction of

£700,000 from the figures for 1927-28. The budget provides for a personnel of 100,986, a reduction of 1289; the fleet will absorb 85,700, 3850 will be at schools or under instruction, and 10,450 are allotted to the marines. An increase of £18,000 is given to naval aviation; this brings the expenditure for aviation to nearly £1,100,000, exclusive of the sums supplied by the Air Ministry. Of the aviators, 107 naval officers are air pilots and 23 are under instruction; 65 naval officers are observers and 11 are under instruction.

VESSELS BUILDING FOR GREAT BRITAIN

Name	Tons	Condition
Light cruisers:		
<i>London</i>	10,000	Compl. Feb. 1, 1929
<i>Devonshire</i>	10,000	do Mar., 1929
<i>Shropshire</i>	10,000	do Sept., 1929
<i>Sussex</i>	10,000	do Mar., 1929
<i>Dorsetshire</i>	10,000	Laid down 9-21-'27
<i>Norfolk</i>	10,000	Lehd. Dec. 12, 1928
X	10,000	Authorized
X	10,000	{ Authorized; mon-
X	10,000	{ ey not yet appro-
X	10,000	{ priated
<i>Fork</i>	8,400	Compl. Dec. 1929
<i>Ezeter</i>	8,400	Keel ld. Aug. 1, '28
X	8,400	Authorized
X	?	do
X	?	{ Authorized; mon-
X	?	{ ey not yet appro-
X	?	{ priated
Aircraft carrier:		
<i>Glorious</i>	19,000	Compl. Apr., 1929
Destroyer leaders:		
<i>Codrington</i>	1,850 (?)	Ordered 1928
X	?	Authorized
Destroyers:		
<i>Acasta</i>	1,300 (approx.)	Ld. down 1928
<i>Ardent</i>	do	do
<i>Antelope</i>	1,300	Ld. down 1928
<i>Acheron</i>	do	do
<i>Active</i>	do	do
<i>Achates</i>	do	do
<i>Arrow</i>	do	do
<i>Antony</i>	do	do
8 destroyers	do	Authorized, 1928
Submarines:		
<i>Odin</i>	1346 1750	Compl. June, 1929
<i>Olympus</i>	do	do Sept., 1929
<i>Orpheus</i>	do	do
<i>Oswald</i>	do	Compl. Jan., 1929
<i>Osiris</i>	do	do Feb., 1929
<i>Osvald</i>	do	do March, 1929
<i>Parthian</i>	1346 1750 (approx.)	Ld. down 1928
<i>Perseus</i>	do	do
<i>Proteus</i>	do	do
<i>Poseidon</i>	do	do
<i>Pandora</i>	do	do
<i>Phoenix</i>	do	do
6 submarines	do (probably)	Authorized 1928
Mine sweepers (sloop type):		
<i>Bridgewater</i>	945	Compl. March, 1929
<i>Sandwich</i>	do	do
Submarine Depot Ship:		
<i>Medway</i>	?	Compl. March, 1929
X	?	Authorized 1928
Repair ship:		
<i>Resource</i>	?	Compl. Aug., 1929
River gunboat:		
X	?	Authorized 1928
Sloops (cruising gunboats):		
X	1,200 (?)	Authorized 1928
X	do	do
X	do	do
X	do	do
X	do	do

The building programme provides for the construction of two light cruisers, one submarine depot ship, one destroyer leader, eight destroyers, six submarines, one river gunboat, and four sloops (cruising gunboats). One light cruiser and one submarine were to be built in the dockyards; the other vessels were to be given out to contract. Friction between the Royal Air Force and the Royal Navy, over matters connected with naval aviation, continued and served to further indicate the absurdity and inefficiency of the existing state of affairs. Aside from the in-

efficiency produced in the Naval Air Arm, and therefore in the navy, the fact that the system was carried out with so little friction was a tribute to the tact and good sense of the officers involved and not to any admirable qualities of the system itself.

Five light cruisers of 10,000 tons were completed in 1928—the *Australia* and *Canberra*, for Australia, and the *Kent*, *Cornwall*, and *Suffolk* for the Royal Navy. The other vessels of importance completed during the year were the aircraft carrier, *Courageous*, and three river gunboats.

GREECE. The Minister of Marine presented to the council of the Ministry the naval programme for 1929. It consists of four light cruisers and a number of smaller vessels. A credit of 72 million drachmas (1 drachma = 1.3 cents) was asked for their construction. During 1928, five submarines were completed for the Greek Navy, viz: the *Katsonis*, 605/775 tons, which was delayed in delivery until the Spring of 1928; the *Glafrkos*, *Triton*, *Proteus*, and *Nereus* are sister boats with displacements of 730 tons on the surface and 930 tons when submerged; corresponding speeds, 14 and 9.5 knots; armament, one 4-inch gun, eight torpedo tubes of 21.65 inches calibre; complement, four officers and 45 men; length over all, 226.3 feet; beam, 18.7 feet. Three periscopes are fitted and observations can be made when the boat is submerged to a depth of 40 feet below the surface.

INDIA. The Royal Indian Navy, which was being developed from the former Royal Indian Marine, was beset by many difficulties—the chief of which was the caste system of the Hindus, while religious troubles were not unlikely in the near future.

ITALY. The naval budget for 1928-29 (July 1, 1928, to June 30, 1929) provided for the expenditure of 1,151,782,030 lire (1 lira = 5.263 cents). This includes some funds for non-naval purposes. The allotted expenditure for the navy proper is 1,020,949,000 lire. The principal items in lire are: Pay of officers, 66,812,000; pay of petty officers, 70,300,000; pay of other enlisted men, 118,965,000; coast and maritime defense, 30,780,000; semaphore and radio services, 30,780,000; automobile service, 600,000; hydrographic service, 950,000; operation of ships, 136,800,000; factories, fortifications, hydraulic works, 36,360,000; navy yard expenses, 38,102,000; maintenance of ships, 137,000,000; new naval construction, 379,730,000; miscellaneous services, 1,550,000.

The expenses of naval aviation did not appear in the naval budget but were borne by the Air Ministry which includes military, naval, and civil aviation. The new building programme for 1928-29 provided for the laying down, during that fiscal year, of two light cruisers of 10,000 tons, four destroyers of the *Nembo* type, and four submarines of moderate cruising radius. According to the latest available information, the table on page 489 gives the names, displacement, and progress of construction of vessels building or authorized.

JAPAN. The naval budget for 1929-30, submitted to the Japanese Diet provided as follows: (1) Naval construction, 88,000,000 yen, covering expenditure on the light cruisers, *Atago*, *Takao*, *Maya*, and *Chokai* (all of 10,000 tons), one aircraft carrier of 5000 tons, two mine sweepers, one submarine salvage vessel, 14 destroyers

WARSHIPS BUILDING FOR ITALY

Name	Tons	Jan. 1, 1929	Condition
Light cruisers:			
<i>Zara</i>	10,000		Ordered
<i>Fiume</i>	10,000		Authorized
<i>Trento</i>	10,000		Lehd. Oct. 4, 1927
<i>Trieste</i>	10,000		Nearly completed
<i>Bande Nere</i> ...	5,250		Laid down 1927
<i>Colleoni</i>	5,250		do
<i>Di Barbiano</i> ...	5,250		do
<i>Di Giussano</i> ...	5,250		do
Destroyer Leaders:			
<i>D. Tarigo</i>	2,000 (approx.)		Ordered 1927
<i>L. Malocello</i> ...	do		do
<i>U. Vivaldi</i>	do		do
<i>A. Usodimare</i> ...	2,000 (approx.)		Ordered 1927
<i>L. Pancaldo</i> ...	do		do
<i>A. Da Noli</i>	do		do
<i>E. Pessagno</i> ...	do		do
<i>N. Da Recco</i> ...	do		do
<i>N. Zeno</i>	do		Lehd. Aug. 12, '28
<i>G. di Verazzano</i>	do		Ordered 1927
<i>A. Cadamosto</i> ...	do		do
<i>A. Pigafetta</i> ...	do		do
Destroyers:			
<i>Dardo</i>	1,200 (approx.)		Authorized 1928
<i>Strate</i>	do		do
<i>Breccio</i>	do		do
<i>Saetta</i>	do		do
<i>Ostro</i>	1,155		Lehd. Jan. 2, 1928
<i>Aquilone</i>	1,155		do Aug. 3, 1927
<i>Euro</i>	1,155		do July 7, 1927
Submarines:			
<i>X</i>	?		Authorized 1928
<i>X</i>	?		do
<i>X</i>	?		do
<i>X</i>	?		do
<i>S. Santarosa</i> ...	580 ¹⁰⁶⁵		Ordered 1927
<i>C. Menotti</i>	do		do
<i>F. Bandiera</i>	do		Ld. down Jan., '28
<i>L. Manara</i>	do		do
<i>L. Settembrini</i> ..	do		Ordered 1927
<i>R. Settimo</i>	do		do
<i>G. Bausan</i>	630 ¹⁰⁵⁰		Launched 1928
<i>A. dei Genesys</i> ..	do		do
<i>T. Sperti</i>	780 ⁹⁹⁰		do
<i>G. da Procida</i> ...	do		Building
<i>E. Rieramoneca</i> ...	1400 ¹⁷³⁵		do
<i>M. Bragadino</i> ...	825 ¹⁰⁸³		do
<i>F. Corrideni</i> ...	do		do
Aircraft Tender:			
<i>X</i>	(large)		Authorized 1927

of 1700 tons, four submarines of large type, and two river gunboats (many of the foregoing not commenced). (2) Public works of navy yards and stations, 9,200,000 yen. This was pursuant to the provisions of the special programme of 1921-1933 to repair and improve facilities at navy yards and stations—total estimated expenditure in 12 years, 154,000,000 yen. (3) Maintenance of new ships, 12,000,000 yen. (4) Construction of two new airplane squadrons, 3,000,000 yen. (5) Construction of airplanes and apparatus to prepare battleships, battle cruisers, and light cruisers to carry and operate airplanes, 6,500,000 yen. (6) Repair and modernization of ships, 4,000,000 yen. (7). Naval manœuvres and experiments, 1,000,000 yen. (8). Propaganda, 100,000 yen. The propaganda is designed to oppose communistic ideas in factories, navy yards, schools, etc. Of the 14 new destroyers of 1700 tons, at least 10 had not been laid down on Oct. 15, 1928; these boats were to have a speed of 34 knots and carry six 4.7-inch guns, two small anti-aircraft guns, and nine torpedo tubes in triple mounts.

Much attention continued to be paid to aviation. Two new airplane squadrons were provided for in the budget, as were planes, catapults, etc., for all capital ships and cruisers. Some of these planes, at least, were to be fitted to land on the deck of aircraft carriers. Small planes, like those of the U. S. Navy, were under consideration for submarines. The construction of a new rigid airship to replace the *N-3* was under considera-

tion. The loss of *N-3* was believed to be due to excessive weakness and this defect was to be avoided in the new design.

The Government presented a new naval programme to the Diet which provides for the construction of 40 vessels (light cruisers, destroyer leaders, destroyers, submarines, and auxiliary vessels) to be completed in five years at a total cost of 200,000,000 yen, the work to begin in 1929-30. This programme was independent of the former one which was to be completed in 1931 and provided for 23 vessels. The Japanese Government was looking forward to the day when the restrictions of the Washington Conference shall have expired by limitation and was planning to have all necessary subsidiary craft completed by that time so that, if necessary, available funds could be devoted to the building of capital ships.

The aircraft carrier, *Kaga*, 26,900 tons, was scheduled to be completed about Feb. 1, 1929; the maximum trial speed was 28.5 knots. The light cruiser, *Furutaka*, 7100 tons, launched in 1925, proved in service to be too weak in the hull and was to be repaired and strengthened. Similar work it was thought might be necessary in the case of her sister ship, the *Kako*.

According to the latest available information, the names, numbers, tonnage, and condition of the vessels under construction, or authorized, for the Japanese Navy are as given in the following table.

VESSELS BUILDING FOR JAPAN

Name	Tons	Jan. 1, 1929	Condition
Aircraft carriers:			
<i>Kaga</i>	26,900		Compl. Feb. 1, 1929
<i>X</i>	5,000		Compl. Feb. 1, 1929
Light cruisers:			
<i>Nachi</i>	10,000		Authorized
<i>Myoko</i>	10,000		Under trial
<i>Ashigara</i>	10,000		do
<i>Hayuro</i>	10,000		Leh. May 22, 1929
<i>Atago</i>	10,000		do Mar. 24, 1928
<i>Takao</i>	10,000		Ld. down 1926-27
<i>Maya</i>	10,000		do 1926-27
<i>Chokai</i>	10,000		do 1928
<i>X</i>	10,000		do 1928
<i>X</i>	10,000		Proposed
Destroyers:			
<i>Nos. 44 to 58</i> ..	1,700		do
Gunboats:			
2 of river type..	350 (approx.)		Not all laid down.
Mine Sweepers:			
<i>N-5</i>	700		Ordered 1928
<i>N-6</i>	700		Building
Mine layers:			
<i>Itsukushima</i> ...	800		Possibly completed
<i>Shirataka</i>	800		do
Submarines:			
1	2,500 (approx.)		Building
15	(1st class)		Not all ordered
3 or more ..	1150/1750 (approx.)		Building

The figures for submarines were considered doubtful but probable. The reports were conflicting and incomplete.

JUGO-SLAVIA. The only vessels building for the navy were two submarines of 630/780 tons that were similar to the boats of the French *Ariadne* type; they were under construction at St. Nazaire, France, and were nearly completed at the end of the year.

THE NETHERLANDS. The amount of the naval budget for 1928 was 40,500,000 florins (1 florin = 40.2 cents), of which 10,700,000 florins was for new construction. During the year, very important changes in the government were made. The ministries of War and Marine were consolidated and form the Ministry of Defense. The naval general staff was to continue as before; the

Minister of Marine became Secretary General of the Marine. Of the two navy yards, that of Willemsoord was retained, the other closed. The vessels building for the navy at the end of 1928 were four destroyers of 1620 tons—the *Van Galen*, *Witte de Wit*, *Vannes*, and *Bankert*. Four others of the same class—the *Evertsen*, *De Ruijter*, *Piet Hein*, and *Kortenaer*—were completed in 1928. These vessels have a length of 322 feet over all; beam, 31.25 feet; draft, 9.75 feet; armament, four 4.7-inch guns, two 3-inch anti-aircraft guns, six 21-inch-torpedo tubes, a bomb thrower, and 24 mines; speed, 34 knots at deep load; complement, 126 officers and men. A seaplane is included in the equipment. A submarine of about 600 tons (surface displacement) has been reported as under construction, but the report is not definitely confirmed.

NORWAY. The Minister of Defense asked a credit of 1,567,000 crowns (1 crown = 26.8 cents) for the completion of the two small submarines, *R-5* and *R-6*, the only vessels under construction for the Norwegian Navy in 1928. He also recommended the building of a destroyer of about 1000 tons for which the estimated cost was 6,500,000 crowns.

PERU. The new submarines, *R-3* and *R-4* (submerged displacement, 682 tons), described in the YEAR BOOK for 1927, were completed by the Submarine Boat Corporation at New London, Conn., in 1928. Two similar boats, *R-5* and *R-6*, also building at New London, were complete or nearly so, at the end of the year.

POLAND. The navy of Poland was undergoing steady development. Much of the expenditure was concerned with the improvement of the port of Gdynia which had been extended, deepened, furnished with docks and a navy yard, and otherwise prepared for the use of the navy and of maritime commerce. The projected fleet was to consist of two light cruisers, 12 destroyers, and 12 submarines. The destroyers, *Burza* and *Wicher*, and the submarines, *Rys*, *Zbik*, and *Wilk*, described in the YEAR BOOK for 1927, were building in France and nearly completed at the end of the year. A number of French naval officers were serving as instructors on the schoolship, *Baltic* (ex-French cruiser, *Desaix*), of 7600 tons and in advisory capacities. The river fleet had been reinforced by new gunboats and armed motor boats; and the navigability of the Vistula was being steadily improved.

PORTUGAL. On account of the many disturbances in China, the Government had decided to establish a naval base in Indo-China.

RUSSIA. The efficiency of the Russian fleet still remained at a low ebb and must always continue to do so unless the Soviet Government can find some method to secure real discipline and permanent naval ranks and promotion, a result which actual communism renders impossible. Nevertheless, the general conditions of naval affairs was said to be improved to a considerable extent, largely due to better instruction of officers and men and a larger control by ex-officers of the Imperial Navy. The personnel in 1928 consisted of 23,650 men, of which only 10,120 were serving on board ship (605 on submarines). Of 530 officers, 130 were ex-officers of the Imperial Navy. The principal force, the Baltic Fleet, consists of a high sea squadron and a coast defense squadron. The former comprises three battleships (*Marat* class—24,000 tons), 12 destroyers, and 8 to 10 submarines. The Baltic

Fleet was commanded by Admiral Wittorow.

SPAIN. During the Spring of 1928, the Government published a new construction programme that was much discussed in the Spanish press. The principal controversy concerned the most important item, three 10,000-ton light cruisers, that were estimated to cost 240,000,000 pesetas. The opponents declared that two 25,000-ton battleships, each carrying six 16-inch guns, could be built for the same amount of money. The final decision was for the cruisers and the programme was approved for the following vessels and estimated costs:

Vessels	Pesetas
3 light cruisers of 10,000 tons	268,500,000
3 destroyer leaders of the <i>Churrua</i> type	47,380,000
12 submarines of type C	144,000,000
2 fuel-oil carriers	11,000,000
3 gunboats	3,900,000
Various small vessels	12,000,000
Total cost in pesetas (1 peseta = 16.25 cents)	486,780,000

There were under construction for the Spanish Navy: the light cruiser, *Miguel Cervantes*, 7850 tons, launched May 19, 1928; 3 destroyer leaders of 1650 tons, the *Lepanto*, *José Luis Díez*, and *Almirante Ferrandiz*; 4 submarines of the C class (915/1290 tons), *C-3*, *C-4*, *C-5*, and *C-6*. The 7800-ton cruiser, *Almirante Cervera* was completed in 1928; also submarines, *C-1* and *C-2*. Two destroyer leaders of the *Lepanto* class were to be laid down to replace the two sold to Argentina. The budget would not be seriously affected as the cost was to be almost wholly defrayed by the proceeds of the sale.

SWEDEN. The budget for 1928 carried an item of a little more than 9 million crowns (1 crown = 26.8 cents) for new construction. This includes the first allotments on the 5-year programme described in the YEAR BOOK for 1927. In considering the programme, the Swedish Parliament omitted, at least temporarily, the building of a new battleship of the *Gustav V* type. The remainder of the programme was approved and consists of one aircraft carrier of 5500 tons, two destroyers of improved *Nordenskjöld* type, one first-class submarine of improved *Gripen* type, two submarine mine layers of 200 tons surface displacement, and four vedette boats. The budget allotted one-half million crowns for aviation and one and one-half millions for coast defense. The first-class submarine, to which was given the name of *Ulven*, was laid down at the Karlskrona Navy Yard in 1928. The surface tonnage is in excess of 600. One or more of the other vessels were to be, or had been, laid down in the fiscal year 1928-29.

The building of the destroyers was delayed until further experience was had with the boats of the *Nordenskjöld* type previously completed. The aircraft carrier is also a mine layer and torpedo transport. The displacement will be 5500 tons; length, 472 feet; beam, 48.5 feet; speed, 28.5 knots; armaments: six 6-inch guns in pairs in 3 turrets, six 3-inch anti-aircraft guns on twin mounts, four machine guns, 25 torpedo tubes, 100 torpedoes, and a supply of mines. She will be fitted with two catapults and two cranes for lifting seaplanes and will carry eight airplanes.

TURKEY. The Department of the Navy was one of the two divisions of the Ministry of the National Defense. It was presided over by the Under-Secretary of State for the Navy, who had recently reorganized it, dividing it into six bu-

reaus: 1. Cabinet of the Under-Secretary. 2. Bureau of Ships. 3. Bureau of Armaments. 4. Office of Pay and Pensions. 5. Office of Supply (provisions, fuel, clothing). 6. Office of Medicine. The naval general staff was consolidated with that of the army—the whole to be called the Grand General Staff. The chief of the naval staff was called the Naval Assistant to the Chief of the Grand General Staff. The office of the Naval General Staff was continued and divided in three parts, Instruction, Operation, and Technical Affairs, and was presided over by a naval council.

Many economies were being effected. The naval bases of Smyrna and Samsoun were abolished and the naval arsenal on the Golden Horn was ceded to the Ministry of National Economy. The new Turkish naval programme included one light cruiser, one aircraft carrier, and several submarines. The two submarines ordered in Holland, the *Birindji* and *Ikindji*, of 500 tons surface displacement, were completed in May, 1928, and arrived in Turkey two or three weeks later.

UNITED STATES. The naval appropriation bill for 1928–29 provided for an expenditure of \$363,737,017.69. The estimated personnel for 1929 is shown in the following table:

Officers, active	8,745
Midshipmen at the Naval Academy	1,746
Officers, retired	1,690
Enlisted men	83,250
Enlisted men, retired	1,498
Nurses	525
Total	97,454

The number of line officers in service on June 30, 1928, was 5437. The authorized maximum, under previous legislation, is 5499. The aviation programme would eventually require 916 officer aviators upon the basis of the existing theory of supplying aviation personnel. On Jan. 1, 1928, 458 line officers were employed as aviators and observers. In addition to these, 22 officers were in training and 96 others were engaged in aviation ground duties. The number of officers and men employed in aviation—afloat and ashore—at the end of the fiscal year 1927–28, was 8580; the estimate for 1928–29 is 9806.

The naval reserve, owing to recent legislation, was undergoing reorganization in 1927. Cruises of 15 days were given during 1928. The fleet reserve, having approximately 900 officers and 4500 men in 149 divisions, was also given 15-day cruises. The sum of \$45,308 was allotted for the pay of officers of the merchant marine naval reserve. The development of this branch was the principal feature of reserve work in 1928. On Aug. 15, 1928, nearly 1500 commissions were mailed to merchant-marine officers who, having made application for commissions, had fulfilled all prescribed requirements. The officers represent over 100 shipping lines and more than 600 vessels of the American merchant marine.

Transferred reservists (enlisted men transferred to the fleet naval reserve after 16 or 20 years' naval service) formed the most important part of the reserve and the number was constantly increasing. The cost of this part of the reserve is a charge upon "Pay of the Navy" and for 1930 it was estimated at somewhat over 10 millions.

The Navy maintains reserve officers' training corps (R.O.T.C.) units at the following universities: Harvard, Yale, Georgia Institute of Technology, Northwestern University, University of

Washington, and University of California. During the fiscal year of 1928–29 there will be three classes under instruction at each of these schools and they will have a total enrollment of 830 students.

The Marine Corps section of the bill provided for an average of 1176 commissioned officers, commissioned warrant officers, and warrant officers, and of 18,000 enlisted men. The work of the Marines in Nicaragua, practically completed at the end of the year, was highly praised by Nicaraguans and Americans alike. Similar approval was given to their work in China and Haiti.

The allotment for aviation, which includes charge for the third year of the 5-year programme, was \$31,315,000. The bill authorized contracts for new planes and other aircraft and accessories to the value of \$16,385,000; and provides \$9,480,000 for the year's obligations on existing contracts. The 5-year programme, authorized on June 24, 1926, is planned to provide the Navy with 1000 "useful airplanes." The development to the end of 1928 was as follows:

Year	On hand	Deliveries	Wastage	Left
1926	351	256	139	468
1927	468	419	182	705
1928	705	270	175	750
1929	750	271	238	783

The contract for the construction of two rigid airships for the Navy was signed on Oct. 6, 1928. The contractor was the Goodyear Zeppelin Corporation. The tenders were: for one ship, including design, \$5,375,000; for both ships, \$7,825,000. These ships, ZRS-4 and ZRS-5, will greatly exceed in size, power, and strength, all airships completed or building. See AERONAUTICS.

Pursuant to authorization by Congress, a contract was made in 1927 for the construction of a "metal-clad" (duralumin) airship at a cost of \$300,000. This is an experimental type of ship and, if it proves to be satisfactory during extended trials, larger ships will be constructed. If a large metal-clad ship is found to be practicable, the saving in construction and upkeep over large ships of existing types is expected to be considerable.

The development of the *P* type (gunpowder propulsion) of catapult was being continued. The first quarterdeck turntable model of this type was placed on the *Colorado* in 1927. The fixed type of catapult, which was mounted on a turret, was giving full satisfaction and the number in the fleet had been increased. New anti-aircraft guns with special fire-control gear, that were supplied to various battleships in 1927, were a great advance on former types of guns and mounts. New types of airplanes were developed during the year, especially a satisfactory training plane. The experimental fighting and bombing planes developed in 1927 were being produced in quantity. The performance of these planes was regarded as very satisfactory.

The submarine, *S-4*, that was sunk off the tip of Cape Cod in December, 1927, by the Coast Guard cutter *Paulding* (ex-Navy destroyer), was raised on Mar. 17, 1928, and taken to the Boston Navy Yard where it was repaired and was being used to test safety devices.

A bill to provide for the repair and alteration of the battleships, *Pennsylvania* and *Arizona*, at a total cost of \$14,800,000 was before Congress at the end of the year. The changes contemplated include new boilers, new masts, new anti-aircraft batteries, new fire-control systems,

increased elevation of the turret guns, increased protection against submarine and aircraft attack, and other items of lesser importance. By a vote of 287 to 58, the House of Representatives passed the new naval construction bill which authorized the building of 15 light cruisers of 10,000 tons and one airplane carrier of 13,800 tons; total estimated cost, \$274,000,000; this bill at the end of the year awaited action by the Senate.

Five cruisers were planned to be laid down in 1930, five in 1931, and five in 1932; the aircraft carrier was to be laid down in 1930; all were to be completed in six years. The bill as originally introduced contemplated a 5-year building programme that included 25 cruisers of 10,000 tons, 5 aircraft carriers, 9 destroyer leaders, and 32 submarines and involved an estimated expenditure of \$740,000,000. Pacifists and the ill-informed press—mostly in the smaller cities and towns—opposed the programme actively. The result of this opposition led the naval committee of the House to report the reduced programme that was contained in the bill as passed. A list of the vessels under construction for the Navy is given in the subjoined table. The river gunboats, which were building in China for service on the Chinese rivers, had been completed—the *Guam* in 1927, and others in 1928. The mine-laying-fleet submarine, *V-4*, was practically completed by the end of March, 1928, and was commissioned on April 2, but the failure of contractors to supply certain fittings delayed the date of her readiness for service until the end of June.

VESSELS BUILDING FOR THE UNITED STATES

Dec. 31, 1928

Name	Tons	Where building	Probable date of completion
Cruisers:			
<i>Pensacola</i> ...	10,000	New York Yard	Feb., 1930
<i>Salt Lake City</i> ...	10,000	Camden, N. J.	do
<i>Northampton</i> ...	10,000	Fore River, Mass.	June, 1930
<i>Chester</i> ...	10,000	Camden, N. J.	do
<i>CL-28</i> ...	10,000	Puget Sd. Yard	March, 1931
<i>Chicago</i> ...	10,000	Mare I. Yard	do
<i>Houston</i> ...	10,000	Newport News	June, 1930
<i>Augusta</i> ...	10,000	do	March, 1931
Fleet submarines:			
<i>V-5</i> ...	*3,000	do	June, 1929
<i>V-6</i> ...	*3,000	Mare I. Yard	Sept., 1929

* Approximate surface displacement according to reports; no official details announced.

URUGUAY. The Government proposed the construction of 2 light cruisers, 1 destroyer leader, 3 destroyers, and 1 squadron of airplanes. The establishment of a naval dockyard, with a dry dock and shops adequate for the repair of vessels of the navy, was also under consideration. The cost of the new vessels was estimated at 6,000,000 pesos (1 peso = \$1.0342). This sum was to be derived in part by proceeds of the sale of the old cruiser, *Montevideo*; the remainder was to be borrowed.

NAVIES. See NAVAL PROGRESS.

NEBRASKA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 1,296,372. The estimated population on July 1, 1928, was 1,408,000. The capital is Lincoln.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Corn	1928	8,937,000	212,701,000	\$151,018,000
Wheat	1928	3,672,000	69,919,000	65,498,000
	1927	3,630,000	73,826,000	80,852,000
Hay	1928	4,458,000	5,877,000 *	52,202,000

Crop	Year	Acreage	Prod. bu.	Value
Oats	1927	4,783,000	7,201,000 *	54,485,000
	1928	2,392,000	78,936,000	29,996,000
	1927	2,441,000	69,813,000	27,925,000
Potatoes	1928	105,000	10,080,000	5,040,000
	1927	84,000	8,904,000	6,678,000
Sugar beets	1928	88,000	1,023,000 *	8,241,000
	1927	82,000	1,036,000 *	7,149,000
Barley	1928	430,000	14,018,000	4,167,000
	1927	246,000	7,577,000	2,684,000
Rye	1928	249,000	3,486,000	3,165,000
	1927	274,000	4,110,000	

* tons.

MINERAL PRODUCTION. The total value of the mineral products of the State was \$3,322,460 for 1926; for 1925, it was \$3,358,585. The clay products and the output of sand and gravel, each somewhat over a million dollars in 1926, formed the chief part of the total. While without important minerals as to total values produced, Nebraska ranked second of the States in the production of pumice.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, were: for departmental maintenance and operation, \$10,974,948 (of which \$1,314,251 was for local education); interest on debt, \$37,462; permanent improvements, \$9,208,833; total, \$20,221,243 (of which \$8,195,355 was for highways, \$1,586,749 being for maintenance and \$6,608,606 for construction). Revenues were \$17,286,726. Of this, property and special taxes formed 37.4 per cent, departmental earnings and charges for officials' services 10.4 per cent, sales of licenses and taxation of gasoline 29.4 per cent. Property valuation was \$3,321,741,538; State taxation thereon, \$5,849,739. State funded debt was nil.

TRANSPORTATION. The total number of miles of railroad line under operation in the State on Jan. 1, 1928, was 6174.38. No additional building in 1928 was reported.

EDUCATION. The year 1928, as noted by State Superintendent Taylor in the *Journal* of the National Education Association, was marked by the establishment of a State-wide programme of character education, and the plan of parent-teacher demonstrations in the rural districts was widely carried out. The school-age population (from 5 to 21 years) of the State in the academic year 1926-27 was placed at 414,975. There were enrolled in the public schools 317,221 pupils, of whom 118,900 were in rural schools, 198,321 in graded schools, and 61,457 in high schools. The total expenditure for public-school education was \$30,903,155.60.

CHARITIES AND CORRECTIONS. The Department of Public Welfare exercised important powers, particularly with regard to child care. This body, however, did not have charge of the State institutions, which were under the authority of a separate Board of Control, Institutions under this board, with their populations as reported July 1, 1927, were: Nebraska Institution for the Feeble-Minded, Beatrice, 827 inmates; Girls' Training School, Geneva, 227; Nebraska Soldiers' and Sailors' Home, Burkett, 253; Hastings State Hospital, Ingleside, 1356; State Industrial School, Kearney, 213; Hospital for Tuberculous, Kearney, 95; Lincoln State Hospital, 1118; Orthopedic Hospital, Lincoln, 106; State Penitentiary, Lincoln, 701; Nebraska Industrial Home, Milford, 83; Soldiers' and Sailors' Home, Milford, 98; Nebraska School for the Blind, Nebraska City, 48 (on June 1); Norfolk State Hospital, 877; Nebraska School for the Deaf, Omaha, 190 (June 1); State Reformatory for Women, York, 52; Nebraska Home for De-

pendent Children, Lincoln, 101; State Reformatory for Men, Lincoln, 253. A furniture manufactory was operated at the Penitentiary. Admittances to the three State penal institutions in 1926, according to the United States Department of Commerce, numbered 495.

POLITICAL AND OTHER EVENTS. Because of the demands made upon the State bank-deposit guarantee fund, Nebraska early in the year abandoned its long-continued practice of paying depositors as soon as the State took control of affairs of a bank that had failed, and proceeded to liquidate the bank's assets first, as in ordinary receivership liquidations. This imposed an indeterminate delay in payments from the State guarantee fund. In March a movement was started at Lincoln to have the State guarantee by law, out of its own funds, 5 per cent of deposits in failing banks. It was then estimated that the affairs of 63 banks were in the hands of the guarantee fund commission, and that when it endeavored to liquidate depositors' claims in full the fund might have on its hands a deficit of some million dollars, unless relieved by State aid. Unpaid deposit claims July 1, 1928, were \$24,650,000. The effort of Nebraska to establish the valued fire insurance policy system was supported by a decision in the United States Circuit Court of Appeals. It was held that where the insured had paid premiums on a \$5000 policy the insurer could not discharge obligation by a \$2500 total loss payment on the ground that the property had been overinsured. Companies were held responsible for valuations as written in policies. It was testified at the Federal Trade Commission's investigation of public utility workings that an agent of the National Electric Light Association had promoted the introduction of 4000 textbooks into schools of the State.

ELECTION. The presidential campaign in Nebraska was intensified by the action of Senator George W. Norris, who in October declared himself in favor of Governor Smith, the Democratic candidate, on account of Smith's more acceptable views on the means to relieve the situation of the farming industry. The greater number of the voters of the State, nevertheless, as in other normally Republican agricultural States, continued to favor the Republican ticket. The majority for Hoover and Curtis, Republican National candidates, was numerically not far from that of 1924 for Coolidge and Dawes. Robert B. Howell, Republican, was reelected United States Senator. In the State's delegation of Representatives, the Republican party made some gain. Arthur J. Weaver, Republican, was elected governor. The popular vote for President was: Hoover (Rep.), 345,745; Smith (Dem.), 197,959.

OFFICERS. Governor, Adam McMullen; Lieutenant-Governor, George A. Williams; Secretary of State, Frank Marsh; Treasurer, W. M. Stebbins; Auditor, L. B. Johnson; Attorney-General, O. S. Spillman; Superintendent of Public Instruction, C. W. Taylor.

JUDICIARY. Supreme Court: Chief Justice, Charles A. Goss; Associate Justices; William B. Rose; James R. Dean; W. H. Thompson; George A. Eberly; Edward E. Good; George A. Day.

NEBRASKA, UNIVERSITY OF. A State institution of higher education at Lincoln, Nebr., founded in 1869. The enrollment for the autumn term of 1928 was 6484 of whom 2700 were women. The enrollment was distributed as follows: Agriculture, 562; arts and sciences, 1986; business administration, 672; dentistry, 96; engineering,

694; graduate, 346; law, 169; medicine, 309; nursing, 102; pharmacy, 117; teachers, 1466. Included in arts and sciences and teachers college were 508 students of the school of fine arts and 182 of the school of journalism. There were 3320 students registered in the summer sessions of 1928, of whom 1047 were men and 2273 were women. The faculty numbered 360 in the autumn of 1928. The total income for the year was \$4,135,390. The library contained 223,885 volumes. New buildings added to the physical plant were Andrews Hall, housing the College of Dentistry and the departments of English, classics, and Germanic languages, on the city campus; a nursery school, a service building, and departmental greenhouses, on the agricultural college campus; dormitories at Nebraska Agricultural School at Curtis; and a new residence and barns at the Agronomy Farm. An additional gift of \$10,000 for the development of the University Museum was made by the Hon. C. H. Morrill. The Chancellor was Edgar A. Burnett, D.Sc.

NEBULÆ. See **ASTRONOMY**; **PHYSICS**.

NECROLOGY. The following list contains the names of notable persons who died in 1928. Articles will be found in this volume, in their alphabetical order, on those whose names are given below without other text.

Abbe, Robert.

Abbott, Brig. Gen. Frederic Vaughan.

Adams, Cyrus Cornelius.

Adams, Granger. American soldier, died at Fort Royal, Va., March 27. He was born at Williamson, N. Y., Sept. 28, 1852, and was graduated from the U. S. Military Academy in 1876 and from the Artillery School in 1882. He advanced in the artillery branch of the Army through the various grades, and became a brigadier general, July 1, 1916, being recognized as one of the leading artillery experts in the United States. In 1910 he was appointed president of the Field Artillery Board. He was retired in 1916, after 44 years' active service.

Adams, Samuel Shugert. American physician and educator, died at Washington, D. C., February 12. He was born at Washington, July 12, 1853, and was graduated from the University of West Virginia in 1875, and from the medical school of Georgetown University, Georgetown, D. C., in 1879. For thirty years Dr. Adams was chief of the department of medicine of the Georgetown medical school. He was a member of the American Pediatric Society, of which he was secretary for many years, and of the Association of American Physicians.

Adams, Walter Booth. American pharmacologist and educator, died at Beirut, Syria, July 9. He was born at Constantinople, N. Y., Feb. 1, 1864, and was a graduate of New York University and the medical school of the same institution. Immediately after receiving his medical degree in 1890 he was appointed to the staff of the medical school of the American University at Beirut, and he served there, as professor of chemistry, materia medica, and therapeutics, until his death. He wrote magazine articles and several books dealing with dermatology.

Alvord, Clarence Walworth.

Ames, Joseph Bushnell. American author and official of the Boy Scouts, died at Morristown, N. J., June 20. He was born at Titusville, Pa., Aug. 9, 1878, and was graduated from Stevens Institute of Technology in 1897. He was employed by the Lidgerwood Manufacturing Company, 1901-03, and by the Public Service Gas Company of Jersey City, N. J., 1904-09, before devoting himself to the writing of stories and to Boy Scout work. He was a member of the national council of the Boy Scouts of America. He wrote, besides short stories and magazine articles: *The Treasure of the Canyon* (1907); *Pete, Cowpuncher* (1908); *Under Boy Scout Colors* (1917); *The Mystery of Ram Island* (1918); *Curly of the Oircle Bar* (1919); *Shoe-Bar Stratton* (1922); *The Lone Hand* (1926); and other books published under his own name; also *Moran of Saddle Butte* (1924); and *The Valley of Missing Men* (1925), published under the pen name of "Lynn Gannison."

Amundsen, Roald.

Andrews, Brig. Gen. George.

Armstrong, Edward.

Artinistall, Samuel George.

Asquith, Herbert Henry, First Earl of Oxford and Asquith.

Auburtin, Victor. German author and journalist, died June 29. He was born at Berlin, Sept. 5, 1870, and attended the gymnasium, and the universities of Bonn, Berlin, and Tübingen. He was an editor of the Berlin *Borsenzeitung*, and later transferred to the Berlin *Tageblatt*, as Paris correspondent. He was arrested in France for disseminating German war propaganda, and for three years he was imprisoned in Corsica. After his release he was a correspondent at Berne and at Madrid. At the time of his death he was editor of the Berlin *Tageblatt*. Auburtin wrote several books, including: *Goldene Kette; Eing der Wahrheit; Deutsche Erde; Onyschale; Deutsche Kunst Stirbt; Was ich in Frankreich Erlebte* (translated into French); and *Ein Glas mit Goldfischen* (translated into Spanish).

Auffenberg-Komarow, Marshal Moritz Freiherr von.

Aulard, François-Victor-Alphonse.

Aumonier, Stacy. English author, died at Clarens, Montreux, December 21. Born in 1887, he first worked as a decorative designer and landscape painter, exhibiting at the Royal Academy, the Royal Institute, and the International Exhibition. He then became, in 1908, a successful monologist, imitating characters with humor and accuracy. At the outbreak of the World War, 1914, he joined the Army Pay Corps, and later drew charts at the Ministry of National Service. Having first published short stories in 1913, he contributed to various magazines in England and America, and published several collections of stories, the most popular being *The Baby Grand* (1926). Others were: *Three Bars Interval; The Love-a-duck; Miss Bracegirdle and Others; Odd Fish; and Overheard*. Mr. Aumonier also wrote the following novels: *Olga Bardel; Just Outside; The Querris; One after Another; and Heartbeat* (1922). His one-act play, *A Nice Thing*, was produced in 1920 at the Comedy Theatre.

Ayscough, John. See Bickerstaffe-Drew, F. B. D.

Bakmeteff, George S.

Baldwin, Bird Thomas.

Ballou, Charles Clarendon. American soldier, colonel in the U. S. Army, and major general in the National Army in the World War, died at Spokane, Wash., July 23. He was born in Orange Township, New York, June 13, 1862, and was graduated from the U. S. Military Academy in 1886, from the Infantry and Cavalry School in 1898, the Field Officers' School in 1916, and the War College in 1917. He served in the Spanish-American War and in the Philippine insurrection, and was a colonel in the regular army at the time of the entrance of the United States into the World War, April, 1917. He was commissioned brigadier general in the National Army in August, 1917, and major general in November. Besides being commander in France of the Ninety-second Division, one of the two National Army divisions composed of colored troops, General Ballou also commanded the Sixth Army Corps. He took part in the battle of the Argonne and that on the Moselle River, and in trench fighting in the Saint-Dié sector. He received the French Croix de Guerre, with palm, and the rank of officer of the Legion of Honor.

Baltzell, Winton James.

Bang, Mrs. Nina.

Barkany, Marie. German actress, died at Berlin, Germany, July 26. She was born at Kaschau, Hungary, Mar. 2, 1862. She was educated at the Ursuline Convent at Kaschau, and then went to Vienna to develop her knowledge of German and to study bookkeeping, to aid her father. There her attention was turned to acting, and after a brief period of training she made her appearance, with great success, at Frankfort-on-the-Main. Her next success was won at Hamburg, and she then became one of the players at the Royal Theatre in Berlin. As head of her own company she appeared in all the principal German cities and in European capitals, including Paris, and she made a tour of the United States with Joseph Kainz. She was noted principally for her portrayals of tragic parts. Among the rôles which she assumed were those of Mary Stuart, Fédora, Tosca, and Magda. She was one of the favorite actresses of the late Emperor Francis Joseph of Austria-Hungary. Several of the German states and the French Republic bestowed decorations on the actress.

Barker, Henry Stiles. American educator and jurist, died, at Jeffersonville, Ind., April 23. He was born at Newstead, Ky., July 22, 1850. He was admitted to the bar of the State of Kentucky in 1874, and practiced law at Louisville, serving as city attorney from 1888 to 1896. After sitting on the bench of the circuit court of Jefferson County, Kentucky, and on that of the court of appeals of the State, he became president of the State University of Kentucky in 1911. He retired in 1917.

Barondess, Joseph. American labor leader, died at New York, June 19. He was born at Kamenetz-Podolsk, Russia, July 3, 1867, and after emigration to America in 1888 continued his studies at the New York University Law School. His first work in America was done as a laborer in a clothing "sweatshop," and for

many years he devoted himself to the cause of the amelioration of the workers in such places and in others. He was active also in Zionism and other Hebrew causes.

Barrett, Thomas Augustine. See Stuart, Leslie.

Barron, Clarence Walker.

Barth, Hans. German author, died March 15. He was born at Stuttgart, Sept. 29, 1862. Besides being a special correspondent of the Berlin *Tageblatt*, he wrote poetry, fiction, and history. Among his works are the following: *Cripiet* (2d ed., 1896); *Unter Südlichem Himmel* (1893); *Römische Allotria; Vadekum für Italienbummler* (1897); *Türke, wehre dich* (1898); *Le Droit du Croissant* (1898); *Est Est Est, Italien Schenkführer* (1900); *Leo XIII, Lebensbild eines modernen Papstes* (1903); *Scirocco, Künstler-Drama* (1905); *Roma Aeterna* (1908); *Ostria, Kunatgeschichtlicher Führer durch Italiens Schenken von Verona bis Capri* (1908 and 1910); *Ostria, Guido spirituale delle osterie* (1908 and 1923); *Die heulende Wölfin Römische Xenien* (1917); *Römische Asche neue Xenien* (1919); and *Epigrammi Romani di un Barbaro* (1926).

Bartholomé, Paul Albert.

Barton, Robert McKinney. American jurist and administrator, died at Tampa, Fla., April 5. He was born at Greenville, Tenn., Nov. 26, 1851. He studied at the University of Virginia, and was admitted to the bar of Tennessee in 1874, beginning his practice at Chattanooga. He was a United States Commissioner, alderman of Chattanooga, member of the State Senate and judge of the court of chancery appeals (later the court of civil appeals), before his appointment as member of the U. S. Railway Labor Board in 1920. Soon after his appointment he was elected chairman of the board. He retired in 1923.

Bashford, Herbert.

Bassett, John Spencer.

Battistini, Mattia.

Bayes, Nora (Dora Goldberg). American actress, died at Brooklyn, N. Y., March 19. She was born at Los Angeles, Calif., in 1880. She made her first professional appearance in 1899 at Chicago, and her first New York debut in 1907. She was a popular favorite in vaudeville and on the musical comedy stage, and appeared with success in England as well as in America.

Beban, George. American actor, died at Los Angeles, Calif., October 5. He was born at San Francisco, Calif., in 1873, where he started singing in minstrels when he was eight years old, while he attended public school. He later became star in *The American Idea*, and he played in *The Sign of the Rose* for six years. Becoming a film actor he specialized in Italian character rôles, and starred in a number of motion pictures. He also became connected with producing, retiring in 1926.

Beckwith, The Rt. Rev. Charles Minnegerode.

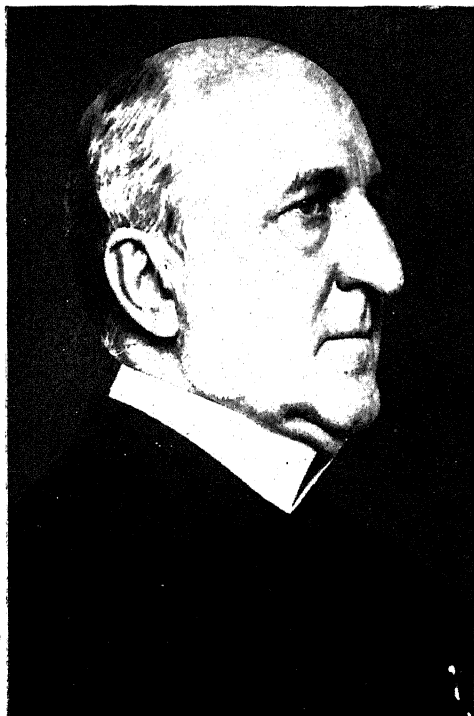
Beebe, The Rev. Dr. Robert Case. American medical missionary in China for the Methodist Episcopal Church, died at Clifton Springs, N. Y., March 13. He was born at Hartford, Ohio, Mar. 16, 1855, and he was educated at Oberlin College and the medical department of Western Reserve University. He was ordained by the North Ohio Conference, and in 1882 went to China as builder and superintendent of a medical mission. He was president of the Chinese Medical Association, 1899-1902, and helped to found the Rockefeller Foundation medical centres at Peking and Shanghai. In 1902 he received from the Emperor of China the Order of the Double Dragon.

Beecher, William C. American lawyer, died at Whitefield, N. H., September 18. He was born at Brooklyn, Jan. 26, 1849, the son of the preacher, Henry Ward Beecher, and after being graduated from Yale in 1872, he joined an expedition sent to study fossils in the West. He entered the Columbia Law School in 1878, and after practicing for several years in New York City, he was appointed Assistant District Attorney for New York County. He later became counsel for various reform societies, being also at one time president of the Brooklyn Excise League, and a member of the legal staff of the Long Island Railroad. He was appointed in 1880 judge advocate on the staff of the Third Brigade, N. G. N. Y., with the rank of major, later being made colonel. He retired from practice in 1925.

Behan, William James. American sugar planter, died at New Orleans, La., May 4. He was born at New Orleans, Sept. 25, 1840, and served through the Civil War in the Confederate Army. In 1905 he was commander-in-chief of the United Confederate Veterans. He was mayor of New Orleans, 1882-84, and a member of the Louisiana State Senate, 1888-92.

Beiro, Francisco. Argentinean statesman and vice president-elect of the Argentine Republic, died at Buenos Aires, July 22. He was at one time minister of the interior, but resigned that post in 1922 to engage in a duel with a deputy who had attacked him in the Chamber of Deputies.

Bell, John Keble.



CHAUNCEY MITCHELL DEPEW
American Statesman and Railway President

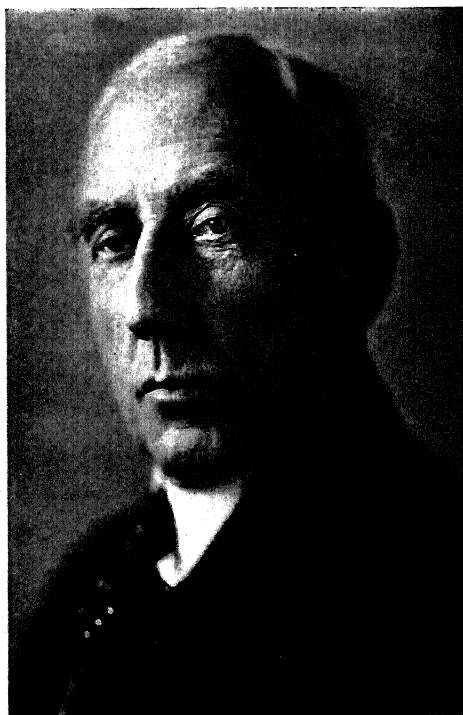


THOMAS HARDY
English Poet and Novelist



© Harris & Ewing

ROBERT LANSING
United States Secretary of State, 1915-1920



© Harris & Ewing

CAPTAIN ROALD AMUNDSEN
Norwegian Explorer

FOUR PROMINENT MEN WHO DIED IN 1928

Bello, João. Portuguese statesman, died January 2. He was born in 1877. After serving in Portuguese East Africa for 29 years, he entered the cabinet as minister of the colonies and made a good record as an administrator.

Bellet, Hugh Hale Leigh.

Benét, Mrs. William Rose. See Wylie, Elinor.

Bennett, Floyd.

Beringer, George M. American pharmacist and editor, died at Collingswood, N. J., June 23. He was born at Philadelphia, Feb. 3, 1860. He was graduated from the Philadelphia College of Pharmacy in 1880, and practiced as a pharmacist at Philadelphia and Camden, N. J. He was president of the American Pharmaceutical Association, 1914, and of the National Pharmaceutical Service Association, 1917-19. He edited the *American Journal of Pharmacy*, 1917-21. In 1924 he received the Remington honor medal for his services to his profession.

Berry, Henry Seymour. See Buckland, Lord.

Berry, John Bennington.

Berry, William H. American politician and manufacturer, died at Chester, Pa., June 19. He was born at Edwardsville, Ill., in 1852, and was a machinist in early life. He invented and manufactured several successful mechanical devices. After he took office as state treasurer of Pennsylvania, in May, 1906, he exposed the frauds in connection with the building of the state capitol at Harrisburg, Pa. In 1910 he was an unsuccessful Democratic candidate for Governor of Pennsylvania, and from 1913 to 1922 he was collector of the port of Philadelphia.

Berwind, John E. American coal operator and philanthropist, died at New York, May 23. He was born at Philadelphia, Sept. 9, 1854. When a young man he, with his brothers, Edward J. and Harry A. Berwind, organized a coal company which became a leader in the business and controlled much of the soft-coal-mining industry of Pennsylvania. Mr. Berwind also acquired extensive shipping interests and was a director and official of numerous large corporations. For some years before his death his philanthropies, especially in New York City and Porto Rico, engaged much of his time and attention.

Betts, James A. American jurist, died at Kingston, N. Y., May 6. He was born at Broadalbin, N. Y., Mar. 18, 1853, and was graduated from the New York State Normal School, Albany, in 1875. He was admitted to the bar in 1880 and practiced law at Kingston, N. Y. He was secretary of the New York State Civil Service Commission, 1883-84; surrogate of Ulster County, N. Y., 1892-98; justice of the supreme court of New York, 1898-1912, and associate justice of the appellate division of the same court, 1910-12.

Bickerstaffe-Drew, The Rt. Rev. Mgr. Count Francis Browning Drew.

Bishop, Joseph Bucklin.

Bishop, William Henry. American author, died at Brooklyn, Conn., September 26. He was born at Hartford, Conn., Jan. 7, 1847, and was graduated from Yale in 1867. Having been editor and proprietor of the *Milwaukee Commercial Times* until 1877, he returned to Yale as instructor in modern languages from 1893-1902. He was appointed United States consul at Genoa the following year, and in 1905 he was transferred to Palermo, where he remained until his resignation from the Consular service in 1910. He was a member of the National Institute of Arts and Letters, having written numerous books, including: *Petmold* (1879); *The House of a Merchant Prince* (1882); *Olney Susan and Other Stories* (1884); *Old Mexico and Her Lost Provinces* (1884); *The Golden Justice* (1887); *The Brown Stone Boy and Other Queer People* (1888); reprinted in 1902 as *Queer People*; *A House Hunter in Europe* (1893); *Writing to Rosina* (1894); *The Yellow Snake* (1902, reprinted as *Tons of Treasure*, 1902); and *Anti-Babel* (1919).

Bixby, Brig. Gen. William Herbert.

Blasco Ibañez, Vicente.

Bleibtreu, Carl.

Blinn, Holbrook.

Bloomfield, Maurice.

Bloomington, Emanuel Watson. American lawyer, merchant, and public official, died at New York, February 6. He was born at Rome, N. Y., Nov. 25, 1852. He was graduated from the law school of Columbia University in 1877, and practiced law for several years before becoming associated with the retail business conducted by his brothers in New York. In 1905 he withdrew from the firm to devote his time to the law and civic affairs. He was president of the board of managers of the Society for Reformation of Juvenile Delinquents and vice chairman of the New York State Bridge and Tunnel Commission.

Blue, Victor.

Blythe, Coralie. English actress, died at Monmouth Beach, N. J., July 24. She was born in England in

1880, and was the wife of Lawrence Grossmith, English actor, and sister of the late Vernon Castle, dancer. She made her first appearance at the Lyceum Theatre, London, in pantomime, and later achieved success, in England and America, in musical comedy rôles. She made her first appearance in the United States in 1915. Among the plays in which she had parts were *The Girl in the Train*, *The Joy Ride Lady*, *Nobody Home*, *The Circus Girl*, *A Gayety Girl*, *The Silver Slipper*, *The Toreador*, *The Girl Behind the Counter*, and *Havana*.

Boeppler, William. An American choral conductor, died in Chicago, December 11. He was born in Germany, in 1863, and studied in Bonn and Leipzig. In 1895 he came to Milwaukee, where he founded the A Cappella Choir and the Wisconsin Conservatory of Music, conducting both until his death, even after his removal to Chicago, in 1904, where he organized the Singverein and the Bach Chorus.

Bogdanoff, Alexander Alexandrovitch.

Bohnke, Emil.

Bokanowski, Maurice.

Bone, John Rainford.

Boosey, Philip Harold (Philip Cunningham). English actor died January 10. He was born Aug. 12, 1865. He made his first stage appearance in 1885 as a minor member of Sir Henry Irving's company. Among the famous actors and actresses with whom he was associated, in England and in America, were Ellen Terry, Lillie Langtry, Cora Urquhart Potter, and Mr. and Mrs. Kendal.

Bornstein, Chayyim Yechiel. Hebrew scholar, died at Wilmington, Del., March 29. He was born at Kosnitz, Poland, 1845, and became one of the first of the modern Hebrew writers in Eastern Europe, maintaining his influential place among scholars until his death. He pursued extensive historical researches, in spite of blindness toward the end of his life, becoming an authority on the Jewish calendar, and his numerous articles on the subject were translated into several languages. He himself translated *Hamlet* into the prose of the Hebrew Bible.

Boy-Ed, Ida.

Bradford, Edward Green. American jurist, died at Wilmington, Del., March 30. He was born at Wilmington, Mar. 12, 1848. He was graduated from Yale in 1868, was admitted to the bar in 1870, and became United States district judge for the District of Delaware in 1897. He retired from the bench in 1918.

Brennan, George E.

Brewer, Sir Alfred Herbert.

Bridgman, Frederic Arthur.

Brockdorff-Rantzau, Count Ulrich von.

Bronson, Walter Cochrane.

Brown, Arthur Lewis. American jurist, died at Providence, R. I., June 10. He was born at Providence, Nov. 28, 1854. He was graduated from Brown University in 1876 and from the law department of Boston University in 1878. After practicing at Providence from 1878 to 1896, he was appointed U. S. district judge for the District of Rhode Island, and remained on the bench of that court for thirty years, retiring in June, 1927. Brown University conferred on him the degree of LL.D. in 1907. In November, 1919, Judge Brown's ruling that the prohibition enforcement act would probably be held unconstitutional, ultimately, attracted widespread notice.

Brown, David E. Canadian-American railway official and financial expert, died at Montreal, P. Q., January 12. He was born at New York in 1872. After business experience in other fields, he entered the employ of the Erie R. R. in 1896. President Roosevelt in 1906 appointed Mr. Brown as one of the twelve members of the accounting board of the United States Interstate Commerce Commission. He supervised all examinations for the board. He resigned from the commission to join the Treasury Department of the United States Government. Mr. Brown's connection with Canadian affairs began in 1926, when he was appointed by the Dominion Government to take charge of the financial accounting studies necessary in the Grand Trunk arbitration. The following year he made a study of the accounts of the Canadian Government Railway. Later he joined the Canadian National Railways' staff and became chief assistant to the financial vice president of the system.

Brown, Sedley. American actor and manager, died at Los Angeles, Calif., September 18. He was born at Boston, Mass., Feb. 29, 1856, and educated at Exeter, N. H. He changed his name to W. H. Sedley. He first appeared on the stage at Booth's Theatre, New York, in 1874, and after numerous engagements with prominent actors of his day, including Fanny Davenport and Edwin Booth, he became a partner with Gustav Frohman in a dramatic agency. He then devoted himself to productions, managing various theatres throughout the United States; and,

being particularly interested in stock companies, he was one of the first to establish permanent repertories. He also wrote several plays, among the most important of which are *The Minister* (1888); and *A Navajo's Love* (1904).

Brownell, William Crary.
Brownrigg, The Rt. Rev. Abraham. Roman Catholic Bishop of Ossory, died at Kilkenny, Ireland, October 1. Born in Kildavin, County Carlow, Dec. 23, 1836, he attended St. Peter's College, Wexford, and Maynooth College, and, after courses in philosophy, scripture, and theology, he was ordained in 1861. He was appointed professor at St. Peter's College in the same year, and five years later he joined the diocesan missionary community at Enniscorthy, becoming rector in 1876. He was made Bishop of Ossory in 1884, where he remained until his death.

Buckland, Lord.
Bulkley, Lucius Duncan.
Bunts, Frank Emory. American surgeon, and educator, died at Cleveland, Ohio, November 28. He was born at Youngstown, Ohio, June 3, 1861, and after being graduated from the U. S. Naval Academy in 1881, he remained in the service until 1883. He then resigned, to study medicine, and in 1886 was graduated from the Western Reserve Medical College. He returned to that institution in 1893 as professor of surgery, holding that appointment until his death. He was also chief of the staff at the Charity Hospital of Cleveland, a director of the clinic foundation, and of the Cleveland Trust Company. During the Spanish-American War, 1898, Dr. Bunts served as major and surgeon in the First Ohio Volunteer Cavalry, and during the World War, 1914-18, he became a lieutenant-colonel in the American medical corps, and commandant of Hospital No. 9 of the British Expeditionary Force.

Burnet, John.
Burnham, Claude George. American railway official, died at Kenilworth, Ill., June 22. He was born at Peterboro, England, June 20, 1879, and was brought to St. Paul, Minn., when he was young. He was educated at the public schools of St. Paul. He began his railroad work in the freight department of the Great Northern Railway Co., in 1895, and in 1902 entered the foreign freight department of the Chicago, Burlington & Quincy R. R. He advanced through various grades until he became executive vice president of the system before he was forty years old.

Burns, Louis Henry. American jurist, died at New Orleans, La., June 9. He was born at New Orleans, May 11, 1878. After graduation from Tulane University in 1904 he was admitted to the bar of Louisiana, in the same year. From 1911 to 1913 he was assistant U. S. attorney for the Eastern District of Louisiana, and from 1911 to 1925 he was U. S. attorney for the same district. In the latter year he became U. S. district judge for the district. His rulings against the Federal machinery for the enforcement of the prohibition act attracted considerable attention throughout the United States.

Burt, Henry Jackson. American civil engineer, died at Wheaton, Ill., July 28. He was born in February, 1873, at Urbana, Ill., and was graduated from the University of Illinois in 1896. He was employed by various engineering companies until 1900, when he became, for a year, assistant professor of civil engineering at Iowa State College. He returned to structural designing, and planned a number of important buildings in Chicago. During the World War, serving as major in the Quartermaster's Department, he was in charge of emergency construction plans in the United States Army. Besides being a member of the American Society of Civil Engineers, Mr. Burt was president of the Western Society of Engineers in 1917.

Butler, Frank Hedges. English sportsman and author, died in England, November 27. Born Dec. 17, 1855, he became one of the earliest motor enthusiasts, being the first honorary treasurer of the Royal Automobile Club, 1897-1902. He aided in the foundation of the Royal Aero Club in 1901, winning the balloon races in 1906 and 1907. Mr. Butler held the English record for the longest one-man balloon ascent, in 1902, and the world's record for the longest channel sea trip, from London to Caen, Normandy, in 1905. He was awarded the commemorative medal of the French Aero Club in that year. Mr. Butler was also interested in music and was one of the founders of the Lyric Club Orchestra, 1889, and of the Imperial Institute Orchestral Society, 1894, of which he became chairman. Mr. Butler, who traveled extensively, wrote: *Five Thousand Miles in a Balloon* (1907); *Across Lapland with Reindeer and Skis* (1917); *Fifty Years of Travel, by Land, Water, and Air* (1920); *Round the World* (1925); and *Wine and the Wine Lands of the World* (1926).

Butler, Thomas S.
Byrne, Donn.

Cadorna, Marshal Count Luigi.

Calderon, Manuel de la Vega. Cuban diplomat, died at Washington, D. C., July 17 at the age of fifty-two. He was the first secretary of the Cuban legation at Washington after its establishment in 1902, and he remained at Washington 14 years. Then he was for two years minister to Norway, and for nine years minister to Argentina. He retired from the diplomatic service in 1927 and removed to Washington for the purpose of educating his two daughters in the United States.

Calvert, The Rev. John Betts.

Cambie, Henry J. Canadian engineer and a pioneer in railroad location and construction in the Dominion died at Vancouver, B. C., April 23. He was born at Tipperary, Ireland, in 1837, and went to Canada when he was 15 years old. He entered the office of Walter Shanley, then directing the engineering work on the Toronto & Guelph Ry., which was afterward absorbed by the Grand Trunk. Thereafter, for seventy years, Mr. Cambie was engaged in railroad construction and planning in Canada. He was largely instrumental in the selection of Vancouver as a terminal port for the Canadian Pacific.

Cameron, Sir Hector Clare. Scotch surgeon, died at Glasgow, November 22. Born at Demerara, British Guiana, Sept. 30, 1843, he attended the universities at St. Andrews, Edinburgh, and Glasgow. He was at one time president of the Glasgow faculty of physicians and surgeons, representing that body at the general medical council. At the time of his death, he was professor emeritus of clinical surgery at Glasgow, having been dean of the faculties in 1921. The University of St. Andrews conferred on him the LL.D. degree in 1911, and the Glasgow University honored him similarly in 1912. He was knighted in 1900 and created a Commander of the Order of the British Empire in 1918. Sir Hector, who was an authority on children's diseases, wrote *The Nervous Child*.

Capet, Lucien.

Carnock, Lord (Arthur Nicolson). British diplomat, died at London, November 5. Born at Carnock, Sept. 19, 1849, Arthur Nicolson succeeded to the eleventh baronetcy. He attended Rugby and Brasenose College, Oxford. Entering the Foreign Office in 1870, he became assistant private secretary to Earl Granville in 1872, and in 1874 he was appointed third secretary to the Embassy at Berlin. Continuing in the diplomatic service after various posts, Lord Carnock was consul-general at Budapest, 1888-93; secretary of the Embassy at Constantinople, 1894; agent in Bulgaria, 1894-95; and Minister in Morocco, 1895-1904. He was then appointed ambassador extraordinary and plenipotentiary at Madrid, 1904-05, and from 1905-10 he served as British Ambassador to Russia. On his return to England in 1910, he became permanent under-secretary for foreign affairs. Retiring in 1916, he was created First Baron of Carnock.

Carracido, José Rodríguez. Spanish educator, scientist, and statesman, died at Madrid, January 3. He was former rector of the University of Madrid, president of the Academia de Ciencias Exactas of Madrid, and one of the leaders of the central group of the Liberal Party of Spain.

Carranza, Emilio.

Carstairs, Charles S. American art expert, died at London, England, July 9. He was born at Philadelphia, Pa., in 1865. He was chairman of the board of M. Knoedler & Co., of New York, Paris, and London, art dealers, and was one of the chief buyers of art objects for the collections of Henry Clay Frick, Joseph E. Widener, A. M. Byers, and others. Shortly before his death he purchased at the Holford sale in London a remarkable group of paintings including three Rembrandts, for \$1,000,000.

Carter, Orrin Nelson. American jurist, died at Glendale, Calif., August 17. Born in Jefferson County, N. Y., Jan. 22, 1854, he was graduated from Wheaton College, Ill., in 1877, and admitted to the bar in 1880. He served as superintendent of schools in Grundy County, Ill., 1882-84, and as state's attorney 1884-88. Moving to Chicago, he became attorney for the Sanitary District in 1892. He was made judge of Cook County two years later, acting as Republican chairman of the charter convention of Chicago 1905-06. He was appointed justice of the supreme court of Illinois in 1906, remaining on the bench until his retirement in 1924. Judge Carter received the LL.D. degree from Wheaton College in 1899, and from Northwestern University, in 1925.

Carton, Richard Claude.

Cartwright, Sir Fairfax Leighton.

Caruson, Guglielmo.

Castro, Alvaro de. Portuguese statesman, died at Coimbra, Portugal, June 29. Dr. de Castro, after serving in various cabinets, formed a short-lived ministry in November, 1920. Three years later he again

formed a cabinet, which lasted until June, 1924. He was accused of anti-Government activities in 1926 and was exiled at Paris for many months, returning to Portugal shortly before his death.

Cave, Viscount George.

Chamberlain, George Earle.

Chamberlin, Thomas Chrowder.

Chance, Sir Arthur. Irish surgeon, died July 26. He was born June 15, 1859, and was educated at University College, Dublin. He held appointments as surgeon in several hospitals in Ireland and in the ministry of pensions in Ireland, South region, before becoming president of the Royal College of Surgeons in Ireland, 1904-06. He was a member of the council of the College. He was surgeon in ordinary to the lord lieutenant of Ireland, 1892-95 and 1906-15. Sir James, who was knighted in 1905, served in the World War as colonel in the Army Medical Service and as inspector of the special military surgical hospitals, Irish command, 1917-20. He was one of the members of the first General Nursing Council for Ireland, 1919-24. He wrote: *Operative Treatment of Enlarged Prostate; The Surgical Treatment of Empyema; Cholelithotomy*, in the *Dublin Medical Journal*, and other treatises on various phases of surgery.

Chandler, Theophilus Parsons. American architect, died at Radnor, Penn., August 16, at the age of eighty-two. He specialized in ecclesiastical architecture, and his work was highly regarded in Philadelphia. He was instrumental in organizing the School of Architecture at the University of Pennsylvania, and he later became its first director.

Channell, The Rt. Hon. Sir Arthur Moseley. English jurist, died at Falmouth, October 4. He was born at London, Nov. 13, 1838, and was graduated with honors from Trinity College, Cambridge, in 1861. He was called to the bar by the Inner Temple two years later, becoming Queen's Counsel in 1865. He represented his Inn on the Incorporated Council of Law Reporting, and he served on the Council of Legal Education, 1888-97, being elected vice chairman of the General Council of the Bar in 1895. His appointment as Judge of the Queen's Bench Division of the High Courts, in 1897, was approved by his colleagues, and during his 15 years on the bench, he tried a number of important cases. Being sworn a member of the Privy Council on his resignation from the High Court in 1914, he was elected to the Judiciary Committee in 1916, retaining the position until 1921. Judge Channell acted on the King's Bench Division in that year in order to help dispose of cases too long on trial. His greatest service, however, was his work in connection with the trial of Prize appeal cases arising from the World War. After he had left the bench, Judge Channell became a director of the Legal and General Life Assurance Society. He was knighted in 1897.

Chapman, William L. American, director and secretary of the Merritt & Chapman Derrick & Wrecking Company, and director of the Merritt, Chapman & Scott Corporation, died at Daytona Beach, Fla., March 28. He was born at Brooklyn, N. Y., in 1866. His father and his brothers were pioneers in the business of marine salvage, and Mr. Chapman was recognized as an authority on the subject. Among the large undertakings with which he was connected was the righting of the steamship *St. Paul*, which had overturned in the North River, New York.

Charles, Sir James Thomas Walter.

Chavasse, The Right Rev. Francis James. English ecclesiastic, former Anglican bishop of Liverpool, died at Oxford, England, March 11. He was born Sept. 27, 1846, and was educated at Oxford. After serving as curate, vicar, and rector, he became, in 1889, principal of Wyckliffe Hall, Oxford. In the following year he was raised to the episcopate as bishop of Liverpool. He resigned in 1923. He was closely identified with the planning and building of the new Liverpool Cathedral.

Cherryman, Rex. American actor, died aboard the steamship, *De Grasse*, August 10, at the age of thirty. Born at Grand Rapids, Mich., the son of Myrtle Koon Cherryman, a dramatic reader, he attended Colgate University and the University of Michigan. After acting in various stock companies, he went to Los Angeles to take part in the moving pictures. Leaving the screen, he joined the Virginia Throat Players in Pasadena, and was later employed by Tom Wilkes, the western producer. He appeared in *Topsy* and *Eva* in Chicago in 1924, and the following year came to Broadway in *The Valley of Discontent*. He then acted in *Down Stream*, *The Noose*, and *Madame X*, and received a leading part in *The Trial of Mary Dugan*, which, opening in October, 1927, ran for ten months.

Choate, Joseph Kittredge. American engineer, died at San Francisco, Calif., June 19. He was born at Salem, Mass., Aug. 22, 1858, and was educated at the University of Colorado as a civil engineer. From 1873 to

1879 he was in the service of the City of New York. He then entered the railroad field, and was at first supervisor and assistant engineer with the Pennsylvania R. R., then principal assistant engineer in charge of construction with the Erie R. R., and from 1884 to 1896 superintendent of the Union Pacific. In the latter year Mr. Choate became connected with the J. G. White Management Corporation as vice president, retaining the position until his death. He was engaged in the management of scores of public utilities, as director or otherwise.

Chree, Charles.

Clark, William Heermans. American editor and newspaper publisher, died at Miami, Fla., March 12. He was born at Lyons, N. Y., Aug. 12, 1848. He was educated at Hamilton College and Union College, and was admitted to the bar in 1869. He practiced law until 1876, and then became interested in newspaper publication. He was the publisher of the *Standard*, Cortland, N. Y., and the *Sun*, Norwich, N. Y. He was a member of the New York State Assembly in 1875, president of the New York State Press Association in 1890 and president of the New York Associated Dailies in 1902.

Clarke, Samuel Fessenden. American naturalist and educator, died at Williamstown, Mass., August 1. He was born at Geneva, Ill., June 4, 1851. He was graduated from the Sheffield Scientific School, Yale University, 1878, and received a Ph.D. from Johns Hopkins University in 1879 and an A.M. from Williams College in 1891. He served as assistant to the U. S. Fish Commission (1874-75), was a fellow at Johns Hopkins (1879-81), lectured at Smith College, and in 1881 became professor of natural history at Williams College. He remained in that chair for thirty-five years, retiring in 1916 from active work and becoming professor emeritus. Professor Clarke was a fellow of the American Association for the Advancement of Science, a member and former president of the American Society of Naturalists, a member of the American Society of Zoologists and the American Breeders' Association, and a trustee of the Marine Biological Laboratory at Woods Hole, Mass. He wrote several treatises on hydroids and the American alligator. The Samuel Fessenden Clarke Wild Flower Prize, offered annually at many Summer camps for boys and girls, was named for him.

Clement, Edmond.

Cliffe, Adam C. American jurist, died at Sycamore, Ill., June 12. He was born at Sycamore, June 25, 1869. He was graduated in law at Northwestern University, and was admitted to the bar in 1897. He was a member of the Illinois House of Representatives and the Illinois Senate, and was circuit judge of the sixteenth judicial district of Illinois from 1920 to 1923, when he resigned to become U. S. district judge for the Northern District of Illinois.

Clifford, Edward Preston. Vice president of the Bell Telephone Laboratories, died at his birthplace, New York, December 16, at the age of fifty-three. Having attended public schools in that city, he was employed, in 1892, as office boy in the Western Electric Company, continued with that organization and in 1917 he became manager of the eastern district. During the World War, Mr. Clifford was made office manager, in New York, July 1, 1918, and was promoted to commercial manager the following year. When the Bell Telephone Laboratories was incorporated, 1925, Mr. Clifford was made vice president.

Clifton, Charles.

Coats, William Hodge. Scotch manufacturer, died at Paisley, Scotland, August 21. He was born at Glasgow, 1866, and he attended Marlborough College, continuing his studies on the Continent. He became chairman of J. & P. Coats Ltd., a thread firm which has its central offices at Ferguslie, Scotland, where it was founded, with a twelve-horse-power engine, by James Coats in 1824.

Cobb, Calvin. American journalist, died at Boise, Idaho, November 7. Born at Cleveland, Ohio, July 15, 1853, he moved to Chicago when a child, and there worked in his father's publishing house. Later employed as a cattle buyer, he went to Idaho in 1887, and two years afterwards purchased the Idaho *Daily Statesman*, which he published until his death. His forceful editorial page soon brought the paper into prominence. It was responsible for a number of local improvements in Boise, particularly for having the main line of the Union Pacific Railroad Company run through the city. Mr. Cobb was at one time vice president of the Associated Press.

Cohen, Alfred J. See Dale, Alan.

Coleman, Charles Cary. American painter, died in Italy, December 5. Born at Buffalo, N. Y., in 1840; he went to Europe in 1859 to study art, returning to serve in the Union Army during the Civil War. He again went to Italy in 1866, residing in Capri, until his death, but frequently revisiting the United States,

and also painting in London, Paris, and Rome. Elected an associate National Academician in 1881, he was also an honorary member of the Buffalo Fine Arts Academy, of the Albright Gallery, and an associate member of the Newspaper Artists' Association. His work won the bronze medal at the Chicago exposition in 1893, and the silver medal at the Buffalo exposition in 1901. Besides his many pictures of Capri, and his eight *Songs of Vesuvius*, painted in pastels and oils from across the Bay of Naples, he became known for his *Troubadour*, and *Nuremberg Towers*, 1876; *Bronze Towers of St. Mark's*, 1877; and *Venice, Ancient and Modern*, 1881.

Colston, Edward. American lawyer, died at Hot Springs, Va., September 20. He was born in Berkeley County, Va., Apr. 22, 1844, and during the Civil War he fought in the Confederate Army, with the army of northern Virginia. Being wounded and unable to return to the war, he attended Washington and Lee University, and was graduated in law in 1867. He started practice at Cincinnati, Ohio, in 1870, and in 1887 he became counsel for the Cincinnati, New Orleans & Texas Pacific Railway.

Colvin, George.

Compton, Katherine. See Carton, Richard Claude.

Conboy, Mrs. Sara Agnes.

Cook, Sir Theodore Andrea. English author, journalist, and sportsman, died at London, September 16. He was born at Exmouth, Devonshire, Mar. 28, 1867, and after attending King Alfred's grammar school, and Carr's school, he entered Radley. He went to Wadham College, Oxford, rowing on the Oxford crew of 1889. As Captain of the English fencing team, he competed at Paris in 1903, and at the Olympic Games at Athens in 1906. He became assistant editor of the *St. James' Gazette* in 1898, and two years later he was made editor. He left in 1901, however, to work on the staff of the *Daily Telegraph*, and in 1910 he received the editorship of *Field*, which he held until his death. He was knighted in 1916 for war services, particularly in connection with the Belgian Atrocities Commission. He wrote extensively on sport, history, and painting.

Coolbrith, Ina Donna.

Coolidge, Archibald Cary.

Coplin, William Michael Late.

Cordova, Gonzalo S. Former President of Ecuador, died April 14. Dr. Cordova became President of Ecuador in September, 1924, having been elected in the preceding January to succeed José Luis Tamayo. In July, 1925, his administration was ousted by a military junta, after a bloodless revolution, and soon thereafter he fled from Ecuador with his family and made his home in Peru.

Corson, Oscar Taylor.

Coudenhove, Count Max von. Austrian statesman, died at Seehof, near Kissingen, Bavaria, July 5. He was born at Vienna, Dec. 27, 1865. He was the last Governor of Bohemia (now Czechoslovakia), under the Hapsburg dynasty, in 1915-18, having been previously Governor of Austrian Silesia. He was a brother of the late Count Karl von Coudenhove, Austrian statesman, who was also Governor of Bohemia, 1896-1911.

Coulter, John Merle.

Count, The Rev. Dr. Ernest. An American missionary of the Methodist Episcopal Church, died at Brooklyn, N. Y., September 28. He was born at Ellenville, N. Y., Dec. 5, 1861, and was educated at Williams College, Drew Theological Seminary, and New York University, being ordained in 1885. He went to Italy four years later, as pastor of a Methodist Episcopal Church in Florence, and professor of the theological school of that city; he also became superintendent of a Methodist publishing firm in Rome. Returning to the United States in 1893, he was assigned to churches in New York, or vicinity. After 1905 he was superintendent of missionaries in Bulgaria, receiving recognition from the British Red Cross for his work during the Balkan War.

Courtney, William Leonard.

Covington, Harry Franklin.

Cozens, Frederick Schiller. American artist, died at Livingston, New York, August 29. He was born at New York in 1856, and after being graduated from Rensselaer Polytechnic Institute, he served the *New York Herald*, as an artist of yachting events, having practical knowledge of the sport. His painting, which he continued all his life, included many pictures of international yacht races.

Crane, Frank.

Crane, Michael Joseph. American Roman Catholic bishop, died at Philadelphia, December 26. Born at Ashland, Pa., Sept. 8, 1863, he entered St. Charles Seminary, Overbrook, Pa., in 1880, and attended the Catholic University of America, 1889-90. He was ordained priest in 1889 and was successively assigned to parishes in Downingtown and Reading, Pa. Ap-

pointed pastor of St. Francis de Sales' Church, Philadelphia, in 1903, he was made vicar general and consultant to the Archdiocese of Philadelphia in 1919, on Sept. 19, 1921, was consecrated bishop of Curium, and auxiliary bishop of Philadelphia.

Crane, William Henry.

Cratty, Mabel. American secretary of the national board of the Young Women's Christian Association, died at New York, February 27, at the age of 60. She was born at Bellaire, Ohio, and was educated at Ohio Wesleyan University. After teaching at Wheeling, W. Va., and Kent and Delaware, Ohio, in 1900 she became principal of the Delaware high school. From 1904 to 1906 she was associate general secretary of the American committee of the Young Women's Christian Association, from 1906 to 1909 executive secretary of the home department of the national board, and from 1906 general secretary of the national board. Ohio Wesleyan University conferred on her the degree of LL.D. in 1922.

Critchett, Richard Claude. See Carton, Richard Claude.

Crookshank, E. M. English bacteriologist, died at East Grinstead, England, in July, at the age of 68. He studied under Lord Lister, and in 1882 was selected for special work in surgery on the staff of Sir James Hanbury, principal medical officer of the British expedition to Egypt. He was present at the battle of Tel-el-Kebir, and won the medal and the Khedive's star for his services. In 1886 he was appointed professor of bacteriology at King's College, and he founded there the first laboratory in England for research and instruction in bacteriology and comparative pathology. In his later years he devoted much time to research in veterinary and agricultural science.

Cross, Charles Wilson. Canadian statesman, died at Calgary, Alta., June 2. He was born at Madoc, Ont., Nov. 30, 1872, and was educated at Upper Canada College, Toronto University, and Osgood Hall, Toronto. He was prominent as a Liberal in the public affairs of Alberta for many years, and was the first attorney-general of the province. He was also a former member of the Dominion House of Commons.

Cunningham, Philip. See Boosey, P. H.

Curel, Viscount François de.

Currier, Frank J. American actor, died at Beverly Hills, Calif., April 22. He was born at Norwich, Conn., Sept. 4, 1857, and went on the stage when very young. He was a member of the companies of many celebrated players, Edwin Booth, Margaret Anglin, Helena Modjeska, Maude Adams, and others, and after 35 years on the legitimate stage went into the films.

Daeschner, Emil.

Dale, Alan.

Dal Piaz, John-Henri. French transportation expert and chairman of the French Line of steamships, died at Paris, June 18. He was born at Paris, Feb. 26, 1865. He was educated for the legal profession but left it in 1888 for the shipping business. In 1898 he became general secretary of the French Line. In 1909 a director, and in 1920 he succeeded the late Pellerin de Latouche as chairman of the board of directors. He was largely instrumental in opening up the Sahara Desert region to auto traffic. The French Republic conferred on M. Dal Piaz the rank of grand officer of the Legion of Honor.

Daly, Charles Frederick. American automobile manufacturer and former railway official, died at New York, January 6. He was born at Canton, Ill., July 6, 1865, and began to work for the Chicago, Burlington & Quincy R. R., at 13. He advanced in position, with several lines, in the passenger departments, until in 1905 he was appointed passenger traffic manager of the Lake Shore & Michigan Southern Ry., and of the Lake Erie & Western and Michigan Central. In the following year he became passenger traffic manager of the New York Central system, and a vice president. He remained with the New York Central until 1920, leaving the system to become vice president and a director of Durant Motors, Inc. From 1924 to 1926 he was also president of the Liberty National Bank, of New York.

Dalziel, Lord Davidson.

Darwin, Sir Horace. English scientist, died at Cambridge, September 22. He was born at Down, Kent, May 13, 1851, the son of Charles Robert Darwin. After being graduated from Trinity College, Cambridge, he served as an apprentice in an engineering firm, and invented a klinostat which measured the effect of gravitation on plants. Moving to Cambridge, Sir Horace worked with A. G. Dew-Smith, who was engaged in manufacturing instruments for medical research. Together, they formed, in 1895, an organization which developed into the Cambridge Scientific Instrument Company. He was elected mayor of Cambridge in 1896, serving one term. Mr. Asquith appointed him, in 1909, to the advisory committee of aeronautics, to recommend to the Government the research necessary for the

development of aviation. During the World War, he was especially able in adapting his ideas to the conditions of warfare, and in cooperating with other engineers in the design of instruments. Sir Horace was made chairman of the air inventions committee in 1917. He was knighted the following year.

Davies, Arthur B.

Davies, David Charles.

Davila, Fausto. Minister of Foreign Relations of Honduras, died at his birthplace, Tegucigalpa, Honduras, September 27. Born in 1855, he was graduated in law at the National University of Honduras, and having practiced for several years, he became judge of the Civil Court, and was later appointed justice of the Supreme Court. He was made secretary to President Corgan, 1888, and to President Sierra, 1900-04, and he served as a delegate to the Pan-American Conference at Rio de Janeiro, 1906, at Washington, 1916, and at Havana, 1928. When President Lopez Gutierrez's dictatorship was overthrown in 1924, Davila acted as provisional president for a few months, until he was selected confidential agent to the United States. He became Minister of Foreign Relations the following year, and he held that position until his death, being active in negotiations with the United States to settle boundary disputes between Honduras and Guatemala.

Davis, Henry William Carless.

Davis, Sir Mortimer Barnett.

Dawson, Sir Horace.

Dawson, William James.

Day, William A.

Dean, Bashford.

De Friese, Lafayette Hoyt. American lawyer and authority on international law, died at San Francisco, Calif., June 17. He was born in Alabama in 1852, and was graduated from Harvard in 1876, after having studied previously at the University of California. In 1879 he was admitted to the bar in New York, and four years later went to London, where he made his home during the remainder of his life. He represented banking houses in many important cases involving international relations, and practiced law in the United States as well as in England.

Delany, Henry Beard.

De Lima, Elias.

del Preto, Major Carlo. Italian aviator, was killed at Rio de Janeiro, August 16, when his airplane fell during a trial flight. He navigated the *Santa Maria II*, with Commander De Pinedo, on the flight round the world in 1927. Major del Preto established an endurance record for Italy, with Major Ferrarin, and the two aviators also made a non stop trip from Rome to Brazil breaking all speed and long distance records.

del Rio, J. Mora y. See Mora y del Rio, J.

Denny, Sir Cecil Edward. Former superintendent of the Northwest Mounted Police of Canada, died at Edmonton, Alberta, August 21. He was born in England on Dec. 14, 1850, and was educated at Cheltenham College as well as in France and Germany. Moving to Canada, he joined the Northwest Mounted Police at its original foundation in 1874, later becoming captain and inspector. He also was connected with the Indian Department, being in charge of the Western Plain Indians during the Riel Rebellion of 1885. Settling as a farmer near Athabaska, he was made archivist to the Alberta government. He succeeded to the baronetcy in 1921 on the death of his half-brother. Captain Denny published two books: *The Riders of the Plains* and *The Birth of Western Canada*.

Denton, James Edgar. American engineer and educator, died at Maplewood, N. J., July 22. He was born at Piermont, N. Y., in 1855. He was graduated from Stevens Institute of Technology in 1875, and in the following year became an instructor there. He retained a place on the staff of the institute until his death, attaining, in 1898, the chair of professor of mechanical engineering. While teaching at Stevens he practiced as a mechanical engineer. Among his works was supervision of the construction of about three miles of the new Croton Aqueduct tunnel for New York City. He engaged in the manufacture of machinery also. In 1893 he was a member of the jury of awards at the World's Columbian Exposition at Chicago.

Denton, Oliver.

Depew, Chauncey Mitchell.

de Robeck, Sir John Michael.

Dessewffy, Aurel, Count. Hungarian statesman, died March 28. He was born in 1845. He was formerly the president of the upper house of the Hungarian Parliament.

Desticker, Pierre-Henri.

Deutsch, Felix.

Devoy, John.

Diaz, Marshal Armando.

Dickey, James Edward.

Dickinson, Jacob McGavock.

Dicksee, Sir Francis Bernard.

Dickson, Lydia. American actress, died at Hollywood, Calif., April 2. She was born in 1878. She originated the rôle of the featured comedienne in Hoyt's *A Texas Steer*, and played on the road for several years with Raymond Hitchcock in *The Old Soak*. For two seasons she acted in the films.

Diller, Joseph Silas. American geologist, died November 13. Born at Plainfield, Pa., Aug. 27, 1850, he was graduated from the Lawrence Scientific School, Harvard, in 1879, continuing his studies at Harvard and Heidelberg. After accompanying the Assos expedition, 1881-83, he joined the U. S. Geological Survey in the latter year, remaining with that organization until his death. Besides having been at one time vice president of the Geological Society of America, and of Section E of the American Association for the Advancement of Science, Mr. Diller was once president of the Geological Society of Washington, and secretary of the Washington Academy of Sciences.

Ditrichstein, Leo.

Dix, John Alden.

Djéjal Bey. Turkish diplomat and former consul general at New York City, died at New York, January 13. He was fifty-six years old, and had served as first secretary of the Turkish legation at Washington, 1896-04. In 1906 he held a similar position at London. He had been also consul general in Persia, India, and Hungary.

Donn-Byrne, Brian Oswald. See Byrne, Donn.

Donnelly, Dorothy Agnes.

Donohue, Charles D. American jurist, justice of the Supreme Court of New York State, died at New York March 5. He was born at New York, in 1880, and was graduated from the College of the City of New York and the New York Law School. He was admitted to the bar in 1905. In 1912 he was elected to the Assembly, the lower house of the New York State Legislature, and in 1923 he was elected justice of the State Supreme Court.

Dooley, Johnny (John D. Dool). American actor, player of rôles in musical comedies and in vaudeville, died at Yonkers, N. Y., June 7. He was born at Glasgow, Scotland, in 1887. After working at various occupations he followed his brother, William Dooley, also a well-known comedian, to the stage, and was successful in several popular shows in New York and elsewhere. He was a brother of Ray Dooley, comedienne and moving picture actress.

Doulcet, Jean.

Drouhin, Maurice. French aviator, was killed at Paris, August 8, after the monoplane which he was to have piloted across the Atlantic crashed during its fourth trial flight over the Orly Flying Field. M. Drouhin was born in 1891.

Duncan, George Martin. American educator, professor emeritus of logic and metaphysics at Yale University, died at Hackensack, N. J., July 27. He was born at Haledon, N. J., Nov. 26, 1857. He was graduated from New York University in 1881, and studied as a graduate fellow in divinity and philosophy at Yale University. He attended the Universities of Jena, Leipzig, Berlin, and Paris until 1888. In that year he returned to Yale as instructor in mental and moral philosophy, becoming assistant professor of that subject (1891-94) and professor (1894-1904). Then, from 1904 to 1923 he was professor of logic and metaphysics; in the latter year he became professor emeritus, after 35 years of service at the university. He was chairman of the section on logic of the World Congress of Arts and Sciences held in connection with the exposition at St. Louis, 1904, and he was chairman of the meeting which organized the American Philosophical Association. He was a member of other learned societies. In 1901 New York University conferred the degree of LL.D. on him. Dr. Duncan was the translator from Latin and French of *The Philosophical Works of Leibnitz* (with notes, 1890 and 1908), on which he was engaged for almost 20 years; he was also a contributor to the *Memoirs of President Porter* (1893) and to philosophical and psychological journals.

Duncan, James.

du Pont, Philip Francis. Retired American manufacturer, died at Wilmington, Del., May 17, at the age of forty-nine. He was born at Louisville, Ky. Mr. du Pont was a former member of E. I. du Pont de Nemours & Co., but had not been engaged actively in business for a decade before his death.

du Pont, William. Retired American manufacturer, died near Brunswick, Ga., January 20. He was born near Wilmington, Del., Aug. 21, 1854. He was graduated from the Massachusetts Institute of Technology. In 1876 he entered the business of E. I. du Pont de Nemours & Co., and became head of various interests conducted under that name and others. He retired from business in 1892, and thereafter devoted much attention to the breeding of Jersey cattle and Per-

cheron and hackney horses. He was the inventor of a dynamite-mixing machine.

Durbin, Winfield Taylor. American governor and business man, died at Anderson, Ind., December 18. Born at Lawrenceburg, Ind., May 4, 1847, he attended public schools and during the Civil War, 1864-68, joined the Sixteenth Indiana Volunteer Infantry later transferring to the 139th Infantry. He also served in Cuba, at the time of the Spanish-American War, 1898. Mr. Durbin moved to Indianapolis in 1869, and in 1879 moved to Anderson, becoming associated with fuel supply, electric traction, and manufacturing companies in addition to being a banker. He was chairman of the executive board of the Republican State Committee of Indiana, and belonged to the Republican National Committee, and the executive board, 1896-1900. Mr. Durbin was elected Governor of Indiana on his return from Cuba, being in office 1901-05. He ran again, unsuccessfully in 1912.

Dwight, John Wilbur.

Eadie, Dennis.

Eastman, Crystal. See Fuller, Crystal Eastman.

Edwards, Walter Atlee. American naval officer, died at Washington, D. C., January 15. He was forty-one years old. He was former executive officer of the Presidential yacht, *Mayflower*. In 1922 Lieutenant Commander Edwards was in command of the U. S. S. *Bainbridge*, at Constantinople, and saved the lives of 482 men aboard the French military transport, *Vinh-Long*, when that vessel was destroyed by fire. For this action he received the Congressional Medal of Honor and was made a member of the French Legion of Honor.

Egbert, William Grant.

Eglin, William Charles Lawson.

Eidlitz, Otto Marc. American builder, died October 30. Born in New York City Sept. 18, 1860, he attended the College of the City of New York, 1875-77, and was graduated in engineering at Cornell University in 1881. After working in his father's contracting company, he returned to Cornell for a short time and received the C.E. degree in 1890. When his father died two years later, he became senior partner of the firm, which was later incorporated as "Marc Eidlitz & Son." In 1900 he was appointed tenement house commissioner by Governor Roosevelt and Governor Hughes placed him on a commission in 1909, to investigate the unemployment problem, the questions of employers' liability, and safety appliances. During the controversy between eastern railroads and the Brotherhood of Locomotive Engineers in 1912, Mr. Eidlitz served on the arbitration board. After the United States entered the World War, he was appointed chairman of the committee on housing for industrial war workers, Oct. 18, 1917, becoming director of the housing and transportation bureau of the Department of Labor, Mar. 18, 1918, and president of the U. S. Housing Corporation, July 2, 1918. These agencies functioned in the extension construction of dwellings and other buildings. Mr. Eidlitz resumed private business Mar. 1, 1919. In New York City he was an active member of the Building Trades Employers' Association, having been chairman of its board of governors, 1903-05, and also was president of the Mason Builders' Association of New York, 1900-04. Among the many important buildings which his firm constructed are the Metropolitan Opera House and the American Telephone and Telegraph Building in New York City, and the Harkness Memorial Quadrangle of Yale University in New Haven, Conn.

Elliott, Howard.

Elliott, Sarah Barnwell.

Elliott, Walter.

Emmanuel, Prince, of Montenegro, died at Cambes-Bains, France, April 5. He was born at Cetinje, Montenegro, May 28, 1912 (old style); June 10, 1912 (new style). He was the son of Prince Danilo of Montenegro, who abdicated the throne of that country in 1921 in favor of his eldest son, Michael, former King of Montenegro, and brother of the late Prince Emmanuel.

Emmons, Robert W., 2d., American banker and yachtsman, died at Monument Beach, Mass., April 18. He was born at Boston, Mass., in 1872, and after his graduation from Harvard in 1895 entered the banking business in Boston. He was one of the best-known yachtsmen in the United States, and acted as managing director of the cup defender, *Resolute*, in the races with Sir Thomas Lipton's *Shamrock IV* for the America's Cup, in 1920. His own best-known yacht during his racing career was the *Avenger*, a 75-foot overall cutter with which he won the King's Cup in 1907. Mr. Emmons served in the American navy in the World War.

Eno, Henry Lane. American psychologist and philanthropist, died at Somerset, England, September 10. He was graduated from Yale in 1894, and for many years he engaged in research work in connec-

tion with the psychological department of Princeton University, to which he presented Eno Hall, to house a psychological laboratory.

Erroll, Victor Alexander Sereld Hay, Earl of.

Eustis, William Henry. American lawyer, philanthropist, and politician, died at Minneapolis, Minn., November 29. He was born at Oxbow, N. Y., July 17, 1845, and was graduated from the Wesleyan University, Conn., in 1873, and from the Columbia law school the following year. After practicing at Saratoga Springs, he moved to Minneapolis in 1881, where he aided in the foundation of the North American Telegraph Company, of which he later became a director and secretary. He was elected mayor in 1892, also serving as a delegate at the Republican National Convention in that year. He ran unsuccessfully for mayor in 1898. In 1902 he was sent to the Hawaiian Islands as Special U. S. Commissioner. Mr. Eustis, who had been crippled at the age of fifteen while working on a farm, created, in 1923, a \$2,000,000 trust fund for the establishment of the Minneapolis Hospital and Home for Crippled Children.

Eversley, First Baron of Old Ford.

Eyre, Lincoln.

Fairfax, Sir James Oswald. Australian newspaper proprietor, died at Sydney, N. S. W., July 18. He was born at Sydney, Apr. 26, 1863, and was educated at the Sydney grammar school and at Balliol College, Oxford. He was called to the bar of the Inner Temple in 1886. In the following year he joined the staff of the Sydney *Morning Herald*, of which his father had been one of the managers. Subsequently he became a partner in the firm of John Fairfax & Son, owners of the newspaper. He was also one of the proprietors of the Sydney *Mail*. He took a leading part in the Imperial Press Conference in 1909, out of which grew the Empire Press Union. During the World War he was active for the Red Cross in Australia and was chairman of the Society in New South Wales. For his services in this connection, he was made a Companion of the Order of the British Empire, and in 1926 he was promoted to Knight Commander of the order, in recognition of his work as chairman of the Australian section of the Empire Press Union, especially on the occasion of the conference in 1925.

Fayolle, Gen. Marie Emile.

Feafey, Thomas Healy. American educator, died at Canandaigua, N. Y., June 19. He was born at Stevington, England, Feb. 19, 1844, and was brought to America as a boy. He was graduated from Union College in 1863, and served in the Union army in the Civil War. In August, 1865, he became a partner with his father in a shoe manufactory at Albany, N. Y. The father died in 1880, and the son sold the business to engage in scientific study abroad, at Zurich, Heidelberg, Darmstadt, and Paris. In 1887 he became professor of applied physics at Vanderbilt University.

Federer, Heinrich. Swiss author, died April 29. Born at Brienz, Oct. 7, 1866, he moved to Zurich, and there produced his popular comedy, *Lachweiler Geschichten* (1911). His writings include the novels: *Berge und Menschen* (1911); *Jungfer Therese* (1913); *Papst und Kaiser im Dorf* (1924); and *Regina Lob* (1925). He also wrote: *Unser Herrgott und der Schweizer* (1915); *Umriss der Geschichten* (1921); and *Wander- und Wundergeschichten vom Süden* (1924).

Ferrata, Giuseppe.

Ferris, Woodbridge Nathan.

Ffolliott, Gladys. Irish actress, died at London, February 1. She was born in Ireland. Miss Ffolliott was prominent on the British stage from the early 80's until a short time before her death, and appeared in support of such prominent players as Marie Tempest and Mrs. Patrick Campbell. She made her only visit to America in 1926.

Fibiger, Johannes.

Findeisen, Nikolai Feodorovitch.

Fine, Henry Buchard.

Fitchett, William Henry.

Fitzgerald, Edward. See Foy, Eddie.

Flannigan, Richard Charles. American jurist, judge at the Michigan Supreme Court, died at Chicago, Ill., February 17. He was born at Ontonagon, Mich., Dec. 12, 1857, and studied law at the University of Michigan. He was admitted to the bar in 1879, was prosecuting attorney of Menominee County, Michigan, 1881-82 and 1885-86. He was mayor of Norway, Mich., in 1891. From 1909 until his death he sat on the bench of the Supreme Court of the State. He was a Knight of the Papal Order of St. Gregory. Judge Flannigan presided over the Roosevelt libel suit trial, in 1913, when the former President sued George A. Newett, editor, of Ishpeming, Mich., for libel for saying that Mr. Roosevelt was a hard drinker. Newett retracted his statement, and Judge Flannigan fixed the nominal damages at six cents.

Fleischer-Edel, Katharina. A German dramatic

soprano, died in Dresden, in July. She was born in Mühlheim, in 1875. From 1894-7 she was a member of the Dresden Hofoper, and from 1898 until her death of the Stadttheatre in Hamburg. During the season of 1906-7 she sang the Wagner rôles at the Metropolitan Opera House.

Fleming, James Wheeler. American banker and public official, died at Troy, N. Y., April 27. He was born at Troy, Feb. 15, 1867. He was educated at the Troy Academy and the Rensselaer Polytechnic Institute. He was a banker by profession, and vice president of the Manufacturers' National Bank of Troy and director of the national bank of Lake Placid, N. Y., the Bank of Ausable Forks, N. Y., and the Troy Gas Company. He was conservation commissioner of the State of New York, 1911-13. He became mayor of Troy in 1920, serving until 1923, when he became comptroller of the State of New York. He was defeated for reelection in 1924.

Fletcher, Admiral Frank Friday.

Flood, William Henry Grattan.

Florez, Emilio Conde. Venezuelan scientist, died February 24. He was president of the Academy of Venezuela. Shortly before his death he returned from a visit to Europe, where he had been honored by scientific organizations.

Flynn, William James. Former chief of the U. S. Secret Service, died at Larchmont, N. Y., October 14. He was born at New York, Nov. 18, 1867, and after attending public schools he played professional baseball, and worked as a plumber and a keeper in Ludlow Street Jail, New York, before entering the Secret Service of the U. S. Treasury Department in 1897. Having proved successful at tracking down counterfeiters and moonshiners in Pennsylvania, he was soon stationed in New York City, at the head of the eastern division of the service. He became second deputy commissioner of the New York Police Department in 1910, and was given the task of reorganizing the detective bureau, but resigned as he was not satisfied with conditions under which he worked. Flynn returned to the U. S. Secret Service as chief in 1912, resigning five years later. He afterward served for several months at the head of the secret service of the U. S. Railroad Administration, and as director of the bureau of investigation, in the Department of Justice, from July 1, 1919, until August, 1921.

Folger, William Mayhew.

Ford, James B. American yachtsman and capitalist, died at New York, March 29, at the age of 84. Born at New Brunswick, N. J., he was educated at the Peekskill, N. Y., Military Academy. Mr. Ford was first vice president of the United States Rubber Company, vice president and director of the Atlantic Coast Lumber Company, and a director of numerous other large business organizations. He was one of the most prominent yachtsmen of America, and was commodore of the Larchmont, N. Y., Yacht Club from 1915 until his death.

Ford, James Lauren.

Foster, James Calvin. American, commander-in-chief of the United Confederate Veterans in 1927, died at Houston, Tex., August 2. He was born at Rich Hill (now Whitestone), S. C., July 24, 1847, and was 16 when he enlisted in the Confederate Army. He fought in the opposition to Sherman's march through Georgia. After the Civil War he was engaged in business in South Carolina, Arkansas, and Texas. He was commander of the Trans-Mississippi Department of the United Confederate Veterans before his election as commander-in-chief.

Fox, Monsignor John F. American Roman Catholic priest, died at the convent of St. Mary's Cathedral of Trenton, N. J., December 25. Born at New Brunswick, N. J., June 7, 1858; he attended St. Bonaventure's College and Seminary, Allegany, N. Y., St. Charles Seminary, Maryland, and Seton Hall, South Orange, N. J., and was ordained priest July 7, 1881. After serving at St. Joseph's Church, Jersey City, and the Immaculate Conception Church, Camden, N. J., Monsignor Fox was appointed pastor of St. Joseph's Church, Bound Brook, being soon transferred to a church in Sea Bright, where he proved active in extending the parish. He was next made the first pastor of St. Joseph's Church, Trenton, 1893, and in 1895 was assigned to a similar post at St. Mary's Cathedral and made vicar general of the Roman Catholic Diocese of Trenton, positions which he held until his death. Pope Pius X made him monsignor in 1904, and he became a prothonotary of Pope Benedict XV in 1919.

Foy, Eddie (Edward Fitzgerald). American comedian, died at Kansas City, Mo., February 16. He was born at New York, Mar. 9, 1857, and danced in the street for pennies as a small boy. His stage debut was made at Chicago in 1869. After years of hardship, Foy won recognition as a skillful dancer and pantomimist, and for 40 years he was one of the favorites of the American public as a performer on

the musical comedy stage and in vaudeville. He was on the stage of the Iroquois Theatre, Chicago, on Dec. 30, 1903, when the fire broke out which took 574 lives, and his heroism in endeavoring to check the panic was highly commended. He appeared in vaudeville and in *That Casey Girl* with his seven children, being billed as "Eddie Foy and the Seven Little Foyes." He wrote a book of reminiscences, *Clowning Through Life*.

Frampton, Sir George James.

Francica-Nava, di Bontifé, Cardinal Guiseppe. Archbishop of Catania, Italy, died at Rome, December 7. Born at Catania, July 23, 1846, he was created a cardinal by Pope Leo XIII in 1899.

Freas, Thomas Bruce.

Frederick II, William Louis Leopold Augustus.

Frost, Arthur Burdett.

Frothingham, Louis Adams.

Fuller, Crystal Eastman.

Fuller, Loie.

Furneaux, The Rev. Dr. William Mordaunt. English clergyman, former Dean of Winchester, died at New Milton, England, April 10. He was born July 29, 1848. He was educated at Marlborough and at Corpus Christi College, Oxford. He was assistant master at Clifton, 1873, and at Marlborough, 1874-82; and head master at Repton to 1900. Then he became canon of Southwell, and in 1903 dean of Winchester, retiring in 1919. Dr. Furneaux was known throughout England for his untiring efforts for the restoration of Winchester Cathedral. He wrote *Commentary on the Acts of the Apostles* (a scholarly work in which he showed his readiness to take a fresh line of interpretation); *The Book of Psalms*, and *Introduction to the Lessons of the Lectionary*.

Gaidner, William Henry Temple.

Gallivan, James Ambrose.

Gardner, Washington.

Gaston, Jean. French diplomat, minister to Uruguay, died at Montevideo, Uruguay, June 30.

Gemünder, August M. American maker of violins, died at New York, March 22. He was born at New York, May 4, 1862. After attendance at the New York public schools, at the age of 16 he became an apprentice to his father, August Gemünder, a famous violin maker who had learned his trade under Vuillaume and was a member of the second generation of the family to follow that pursuit. In 1895 the elder Gemünder died, and August M. Gemünder became head of the firm.

Getz, John. American authority on art, died at New York, June 2. He was widely known in American and European art circles as an adviser and writer on art matters, and had served on many committees in connection with important loan exhibits, notably by the Academy of Design and the American Fine Arts Society. He was connected with Herter Bros. and M. S. Bing. At the time of his death Mr. Getz was engaged in the production of an encyclopedic work on Chinese art. He had written many magazine articles, catalogues, handbooks, and brochures on the subject. He had charge of the decorative art exhibit from the United States at the Paris Exposition, 1900.

Ghysens, Albert Leopold. Belgian-Canadian engineer, died at Montreal, P. Q., June 23, at the age of seventy-six. Born at Brussels, Belgium, he received his training in engineering at the Brussels Industrial School, and after filling important positions in Belgium went to Canada in 1895. There he was engineer in charge of the construction of the Georgian Bay Canal and also of the Transcontinental Railway. After the World War, M. Ghysens supervised the reconstruction of the fort at Malines, Belgium, destroyed in the fighting. For this work he received from the King of the Belgians the rank of chevalier of the Order of Leopold. Later he became chief engineer of the city of Verdun, P. Q., and retired in 1923.

Gibbs, Winifred Stuart. American home economist, died at New York, February 8. She was born at New York, Oct. 6, 1871. She was educated at the Chicago high schools, the University of Rochester, and the Rochester Mechanics Institute. She founded the economy department of the New York Association for Improving the Condition of the Poor, and trained home economics students at Teachers College, New York. She also advised workers in this field in other cities. In 1909 she was a delegate to the Brussels congress which considered questions of home education. Miss Gibbs was editor of *The American Food Journal* and an authority on matters of food and nutrition. She wrote: *Minimum Cost of Education*; *The Children's Book of Food Verses*.

Giesting, Frank A. American engineer and commander of a U. S. engineer regiment, in the World War, died at New York, April 25, at the age of forty-five. He was born at San Francisco, Calif. At the outbreak of the Spanish-American War he left his studies at the University of California to enlist for services in the

Philippines. When the war ended he returned to the University and was graduated in 1906 as a civil engineer. He spent several years in railroad and tunnel construction work in Mexico and South America, and later was employed by the Aluminum Company of America and the Vanadium Company. In 1917 he was commissioned as major in the Three Hundred and Second Engineers, Seventy-seventh Division, and shortly before the close of the World War was promoted to the command of the regiment.

Gilbert, Henry.

Giles, Bertram. British consular official, died at Weybridge, England, March 26. He was the son of H. A. Giles, professor of Chinese at Cambridge University, and was born at Hankow, China, Sept. 24, 1874. After studying at Liège, Belgium, Feldkirch, Austria, and Aberdeen, Scotland, he became student interpreter in China in 1894. He served in consular capacities at various places, and in 1922 became consul general at Tsinan. He was senior British delegate on the Joint Commission for the rendition of Wei-hai-wei in 1923, and in 1923-24 consul general at Canton. While he was serving as British consul general at Nanking in 1927, Mr. Giles and his wife were subjected to serious maltreatment at the hands of Cantonese soldiers.

Giolitti, Giovanni.

Glenarthur, Matthew Arthur. First Baron Glenarthur. Scotch business man, died at Mauchline, Ayrshire, September 23. He was born Mar. 9, 1852, and educated at Glasgow University, later becoming a member of the Royal Company of Archers, the King's Scotch bodyguard. He was chairman of Arthur & Co., Ltd. and the Lochgelly Iron & Coal Co. Having been chairman of the West of Scotland Liberal Unionist Association from 1893-1912, he became a member of the executive committee of the National Unionist Association, 1912-18, and the Scottish Unionist Association, and from 1914-18 he was president of the Glasgow Unionist Association. He was created a baronet in 1903 and a baron in 1918. He acted as chairman of the Glasgow & South-Western Railway from 1920-22.

Gloss, Anna J. American missionary, died at Pasadena, Calif., February 23. Dr. Gloss was said to have been the first medical missionary to take up work in China. She developed at Peking the first medical-missionary hospital, now known as the Union Medical College. She returned to the United States in 1913 to take up Methodist missionary work as a lecturer.

Goddard, Pliny Earle.

Goethals, George Washington.

Goff, Harold. American journalist, died at Salt Lake City, Utah, October 4. He was born at West Jordan, Utah, June 13, 1884, and commenced work as a reporter when he was 14 years old. He was graduated from the State normal school in 1902. Continuing his journalism on various Salt Lake City papers, he taught school for several years, and became instructor in English and oral expression at the University of Utah, 1909-13, being graduated from that university in 1917, and later taking graduate courses at Columbia and the University of Chicago. He had become associated with *The Desert News*, of Salt Lake City, in 1913, and was made editor-in-chief and manager in 1922. He was a member of the Board of Regents of the University of Utah.

Gold, Ebert Habberton. American manufacturer, died at Holland, Mich., November 3, at the age of 60. Born at Cornwall, Conn., he attended schools at Englewood, N. J., and spent one year at Stevens Institute of Technology. Employed by the Edward E. Gold & Company, a heating company, in 1891, he was made its Western manager, with headquarters at Chicago. Under his supervision the company installed steam heat in the cars of many of the Western railroads. Having invented a vapor system of heating, Mr. Gold founded the Chicago Car Heating Company in 1903. He designed many other heating devices, taking out 80 patents, the first in 1888. He was president of the Vapor Car Heating Company of Chicago, and of the Vapor Car Heating Company of Canada, Ltd., and a director of many companies in addition to serving as chairman of the board of the United States Light and Heat Corporation.

Goldberg, Dora. See Bayes, Nora.

González de la Puente y Patron, Ricardo. See Puente, y Patron Ricardo González de la.

Goodchild, The Rev. Frank Marsden.

Gooding, Frank R.

Gordon, Captain Victor.

Gordon-Lennox, Charles Henry. See Richmond and Gordon, Duke of.

Goss, William Freeman Myrick.

Gosse, Sir Edmund William.

Gould, Horace Pierson. American dentist, died at Lakehurst, N. J., April 4, at the age of 53. He was graduated in 1895 from the New York College of Dentistry, and later served on the faculty of the college. Dr. Gould was also a member of the staff of the Kings

County Hospital, Brooklyn, N. Y. He was president of the Brooklyn Dental Society and a former president of the New York State Dental Society.

Graham, W. T. Canadian clergyman of the Baptist denomination, died at Beamsville, Ont., March 20. He was connected with McMaster University, Toronto, Ont., and was pastor of the First Baptist Church of Toronto for 18 years. He was pastor of the Beamsville Baptist Church for six months before his death. He was president of the Baptist Convention of Ontario and Quebec, 1926-27.

Granger, Maude. American actress, died at New York, August 17, at the age of seventy-seven. Born at Middletown, Conn., she was christened Anna Brainard, but later assumed the stage name of Maude Granger. She moved to New York City when she was eighteen, and first appeared in *A Woman's Heart*, at the Union Square Theatre. After several other engagements she played the leading part in *Led Astray*, during the illness of Rose Eytng. She then starred in a number of popular plays, and toward the middle of her career she acted in Shakespearean repertoires. Returning to current drama, she was successful in various plays, including *The Shulamite*, *Lincoln*, *The Love Leash*, *The Eternal Feminine*, *Nancy Stair*, *The Rule of Three*, *The First Year*, *Green Stockings*, *Pollyanna*, and she was the old nurse in *Rackety-Packety House*. While playing in *Pigs* at Chicago in 1925, Miss Granger became ill, and was forced to retire two years later.

Grant, MacCallum. Canadian statesman, former Lieutenant-Governor of Nova Scotia, died at Halifax, N. S., February 23, at the age of eighty-two. He was born in Hants County, Nova Scotia. He was educated at Newport, N. S., and commenced his business career in 1873. He held the office of lieutenant-governor from 1916 to 1925. Mr. Grant was head of the export and brokerage firm of Grant, Oxley & Co., Halifax, was a director of the Bank of Nova Scotia, and was active in the philanthropies of the province.

Graves, Charles Alfred. American professor of law, died at Charlottesville, Va., November 10. Born in Albermarle County, Va., Oct. 20, 1850, he was graduated from Washington College (now Washington and Lee University) in 1869, and from the law school of that institution in 1873. He remained as professor of law until 1899. He was then appointed to the law faculty of the University of Virginia, where he taught until his retirement in 1927. Mr. Graves received the LL.D. degree from Davidson College, N. C., in 1894, and from Washington and Lee University in 1911. Besides aiding in the foundation of the *Virginia Law Register*, in 1895, and serving as its associate editor, 1895-97, he wrote: *Summary of Personal Property* (1893); and *Notes on Real Property* (1912).

Graves, Col. Charles Hinman.

Graves, Waller W. American jurist, died at Jefferson City, Mo., June 17, 1928. He was born in Lafayette County, Missouri, Dec. 17, 1860, and was educated at the State University of Missouri. He was admitted to the bar of his State in 1885. His first political office was that of city attorney of Butler, Mo., 1892-94. He became judge of the Twenty-ninth judicial circuit of Missouri in 1898, and remained on the bench of that court until 1904. In 1906 he became one of the justices of the State Supreme Court.

Greville, Leopold Guy Francis Maynard. See Warwick, Earl of.

Griffis, Rev. William Elliot.

Gromer, Samuel David.

Gruener, Gustav. American educator, died at Providence, R. I., December 5. Born at New Haven, Conn., Mar. 30, 1863, he was graduated from Yale in 1884. He remained at the university as instructor in German, 1885-87. After studying in Europe for two years, he returned to Yale, serving as tutor in German, 1889-92, and assistant professor, 1892-97. He received the Ph.D. degree in 1896. In 1897 he was appointed professor, being head of the department at the time of his death. Washington College conferred the Litt.D. degree on Dr. Gruener in 1909. Besides editing several German textbooks and novels, he contributed articles on German literature to technical periodicals.

Guerrero, Maria. (Maria Guerrero de Diaz de Mendoza.)

Guerry, Rt. Rev. William Alexander.

Gulick, Mrs. Charlotte Vetter.

Gumpfenberg, Hanns, Freiherr von.

Gutierrez, J. F. Mexican congressman and labor leader, died March 5. Señor Gutierrez went to Rome in 1925 as labor attaché of the Mexican Embassy. In October, 1926, he attended the annual convention of the American Federation of Labor at Detroit, Mich., as one of the two Mexican delegates. He was a strong opponent of interference by the United States in the affairs of Mexico and the rest of Latin America.

Guy, William Evans.

Guyot, Yves.

Haig, Earl (Douglas Haig).

Haldane, Rt. Hon. Richard Burdon.

Hale, William Gardner.

Hall, James Parker.

Hamilton, Lord Frederic Spencer.

Hamilton, Hamilton.

Hanford, Franklin. Rear admiral, U. S. Navy, retired, died at Scottsville, N. Y., February 8. He was born at Chili, N. Y., Nov. 4, 1844. He was graduated from the U. S. Naval Academy in 1866, and retired as a rear admiral in 1903, after 40 years' service. He saw service on many stations and in many ships. From 1881 to 1884 he was on the *Pensacola*, as navigating officer, when that vessel circumnavigated the globe and took observations for the study of compass variations.

Hardy, Thomas.

Harrison, Austin.

Harrison, Jane Ellen. English archaeologist and Hellenist, died at London, April 15. She was born in Yorkshire, Sept. 9, 1850. She studied at Newnham (Cambridge) and at the British Museum, visiting also the museums of Berlin, Munich, Rome, and Athens. After 1882 she lectured at the British Museum, South Kensington Museum, Cambridge, and Oxford. She received the honorary degrees of Litt.D. (Durham) and LL.D. (Aberdeen). Besides various papers in the learned periodicals, she wrote: *Myths of the Odyssey* (1882); *Introductory Studies in Greek Art* (1885); (with Mrs. A. W. Verrall) *Mythology and Monuments of Ancient Athens* (1890); (with D. S. MacColl) *Greek Vase-Painting* (1894); *Prolegomena to the Study of Greek Religion* (1903; 2d ed., 1908); *The Religion of Ancient Greece* (1906); *Primitive Athens as Described by Thucydides* (1906); *Themis, a Study of the Social Origins of Greek Religion* (1912); *Ancient Art and Ritual* (1913); *Alpha and Omega* (1915); *Russia and the Russian Verb* (1915); *Aspects Aorists and the Classical Tripos* (1919); *Epitome to the Study of Greek Religion* (1921); (with Hope Mirrlees) *Life of Arch-priest Avvakum* (translated from the Russian) (1925); *Reminiscences of a Student's Life* (1925); (with Hope Mirrlees) *The Book of the Bear* (translated from the Russian).

Harrison, Leon. American rabbi, died suddenly at New York, September 1. Born at Liverpool, England, Aug. 13, 1866, he was taken to the United States while a child, and was graduated with honors from Columbia University in 1886. Having also attended Emanuel Theological Seminary, he was ordained Rabbi, and assigned to the Temple Israel, Brooklyn, returning to Columbia to study philosophy for three years. He was made Rabbi of the Temple Israel, St. Louis, in 1891, and remained there until his death, assembling congregations of Jews and Christians to his Sunday morning lectures.

Harrison, Orlando. American horticulturist, died at Berlin, Md., March 25. He was sixty-one years old. He was the joint proprietor, with his brother, of a large business inherited from his father, and he was president of the American Association of Nurserymen. He was elected a member of the Maryland Legislature in 1914 and retained his membership until his death.

Hart, Max. American clothing manufacturer, died at Chicago, February 22. He was born at Eppelsheim, Germany, June 15, 1853, and was taken to America at an early age. He lived in Chicago after 1858. He was one of the founders and vice president of the large clothing manufacturing firm of Hart, Schaffner & Marx. Mr. Hart was instrumental in establishing the Hart, Schaffner and Marx Prizes in economics, awarded annually for essays on subjects in economics or commerce.

Hartzell, The Rev. Joseph Crane.

Harvey, George Brinton McClellan.

Hastings, Basil Macdonald. English author and dramatist, died at London, February 21. He was born at London, Sept. 20, 1881. He was educated at Stonyhurst and was a member of the British War Office staff for eight years. Then he was assistant editor of the *Bystander* for three years. During the World War he served in the King's Royal Rifle Corps and later in the Royal Air Force. He was the founder of the *Fledgling*, subsequently *Roosters and Fledglings*, the Royal Air Force journal. Hastings published a long list of plays, the most successful of which was *The New Sin*, produced in 1912. He wrote stories also. He collaborated with authors in the production of plays from novels, notably *Victory*, by Joseph Conrad, *If Winter Comes*, by A. S. M. Hutchinson, and *Bad Rock* and *The Angel in the House*, by Eden Philpotts.

Hatzfeldt, Princess Clara de Wildenberg. Widow of the Prussian Prince, Paul Hatzfeldt, died in England, December 18. Born Clara Louisa Prentice, at Sacramento, Calif., in 1861, she was adopted by her uncle, Collis P. Huntington, of New York, in 1864, and her name changed to Clara Elizabeth Huntington. After attending boarding schools in the United States, she traveled in Europe frequently, and on Oct. 28, 1889,

married Prince Paul Hatzfeldt. They lived in castle Schonstein, on the Rhine, and in England.

Haven, The Rev. Dr. William Ingraham. American clergyman and general secretary of the American Bible Society, died at Summit, N. J., June 6. He was born at Westfield, Mass., Jan. 30, 1856, and was educated at Wesleyan University, Drew Theological Seminary, and Boston University, receiving the degree of S.T.D. from the last-named institution in 1881. He was professor of Latin and Greek at Clafin University, Orangeburgh, S. C., 1877-78, and was ordained in the Methodist Episcopal Ministry in 1881. He occupied pulpits at Boston, Newton Center, and Brookline, Mass., until 1899, and in that year became vice president of the Epworth League, of which organization he was one of the founders. He held various other high offices in his church, and from Jan. 1, 1899, until his death was general secretary of the American Bible Society. In that time the distribution of Bibles in various languages by the society increased from 1,000,000 copies annually to more than 10,000,000.

Hay, Mary Garrett.

Hayes, Edward Cary.

Haywood, William Dudley.

Hearn, Clint Calvin. American army officer, died at Atlanta, Ga., February 11. He was born at Weston, Tex., Mar. 29, 1866, and was graduated from the U. S. Military Academy in 1890. He studied subsequently at the artillery school, 1894, the school of submarine defense, 1908, the Army War College, 1912, and the General Staff College, 1920. After serving through the various grades he reached the rank of colonel in 1917, and in August of the same year was promoted to brigadier general, serving as such in the World War. He was retired in May, 1926.

Hederstierna, Carl Fredrik Vilhelm. Swedish politician, died at Stockholm, November 20. Born in 1861, he held various government positions, being made minister without portfolio in 1906. He was elected to Parliament in 1918, and Herr Trygger, the newly created conservative premier, appointed him minister for foreign affairs in 1923. Hederstierna was forced to resign, however, when his suggestion that Sweden and Finland should form an alliance for mutual defense, was universally criticized as overdefiant of Russia. He was chief governor of Stockholm at the time of his death.

Heermans, Forbes. American author and journalist, died September 18, at Syracuse, N. Y., where he was born Oct. 25, 1856. After attending the Syracuse public schools he was graduated from Cornell in 1878. He started his newspaper work in 1800, and since then has written numerous books. His writings include: *Thirteen Stories of the Far West* (1887); *Love by Induction, and Other Plays* (1889); *The Silent Witness*, drama (1890); *The Rancho of the Twelve Apostles* (1892); *Between Two Foes*, drama (1899); *Down the Santa Fe Trail*, a four-act drama; *Twin Star* (1907); *Beacon Island* (1907); *Buena Ventura* (1911); *Tales of West and East* (1922); and *The Greenwood Expedition*.

Hellig, Sterling. American journalist in France, died at Neuilly, France, March 28. He was born at Philadelphia, Mar. 8, 1864, and studied privately, later taking the law course at the University of Pennsylvania. He was admitted to the bar of Pennsylvania in 1885. He accompanied the U. S. Treasury Commission on its tour of France, Spain, and Portugal in 1891, and remained abroad at the end of the tour. From that time until his death, he acted as foreign correspondent for various American newspapers. He received from the French Government the silver medal of *La Reconnaissance Française* for his services to the cause of the Allies.

Hein, Silvio. An American composer of popular music, died at Saranac Lake, N. Y., December 19. He was born in New York, in 1879, and studied in Trieste and Vienna. He wrote numerous popular songs and about 20 musical comedies, of which the most successful were *The Yankee Girl*, *When Dreams Come True*, *A Matinee Idol*, and *The Girls from Home*.

Henschke, Alfred. See Klabund.

Herreid, Charles N. American politician and former Governor of South Dakota, died at Aberdeen, S. D., July 6. He was born in Dane County, Wisconsin, Oct. 20, 1857, and was educated at Galesville (Wis.) University and the law school of the University of Wisconsin, graduating from the latter institution in 1882. He removed from Wisconsin to South Dakota in 1883. He was state's attorney and judge of a county court, and was elected as a Republican to the office of lieutenant-governor, 1892-94 and 1894-96. He was Governor from 1900 to 1904. During the World War he served as Federal Food Administrator for his State.

Hibben, Paxton.

Hickey, James Burke. American soldier, died at New York, January 19. He was born in Maryland,

May 8, 1848. He was appointed to the U. S. Military Academy in 1867, after having seen service in the Navy in the Civil War. He was graduated in 1871 and was assigned to the cavalry. At the time of the Spanish-American War he was a major and U. S. military attaché in Peru, and was relieved to join his regiment in Cuba. He was promoted to a colonelcy in 1908, and was retired in 1909 with the rank of brigadier general, after forty years' service.

Hilsner, Leopold. Accused man in a "ritual murder" case at Polna, Bohemia, in 1899, died at Vienna, January 11. He was born in 1877. On Apr. 1, 1899, at Polna, a young woman, Agnes Hruza, was found murdered, and Hilsner was accused. At the trial the public prosecutor intimated that a "ritual murder," in conformity with alleged Jewish religious practices, had taken place. Hilsner was first convicted, then released when the verdict was set aside, and finally convicted and sentenced to life imprisonment on a charge of complicity. He served 17 years and was pardoned by Emperor Francis Joseph.

Hinitz, The Rev. Frederick William.

Hinsch, Charles Arthur. American banker, died at his birthplace, Cincinnati, Ohio, December 18. Born Oct. 22, 1865, he was employed in various banks in Cincinnati, became president of Fifth National Bank in 1897. He was made president of the Fifty-Third National Bank in 1908, retaining that position through the bank's extensive absorption of other concerns. As president of the Union Trust Company, in 1919. Mr. Hinsch maintained an affiliation with the National Bank, and when the two merged, as the Fifty-Third Union Trust Company, in February, 1927, he was made president of the combined organization, a position which he held until his death. Besides serving as treasurer of the Cincinnati Chamber of Commerce, 1897, as president of the Ohio Bankers' Association, 1904, and of the Cincinnati Clearing House, 1913, he was vice president of the American Bankers' Association in 1916 and president the following year.

Hirkup, Thomas. English clergyman, secretary of the Wesleyan Methodist Conference, died May 8. He was prominent in church circles in the discussion of the proposed union of the three Methodist churches, the Wesleyan, the Primitive, and the United Methodist.

Hisa, Princess.

Hoag, Ella Whittaker. American Christian Science worker, died at Boston, Mass., October 23, at the age of seventy-eight. She was born at Toledo, Ohio, and before marriage her name was Ella Whittaker. After spending a year in the household of Mary Baker Eddy, Mrs. Hoag became a member of the board of lectureship at the First Church of Christ Scientist, at Boston, in 1918. She subsequently was made associate editor of the *Christian Science Journal*, and of the *Christian Science Sentinel*, positions which she held until her death.

Hodson, Sir James W. B.

Hoffman, Frank Sargent. American educator, died at Schenectady, N. Y., December 21. Born at Sheboygan Falls, Wis., Feb. 9, 1852, he was graduated from Amherst in 1876. After studying at Yale and in Germany, 1882-83 he served as instructor in philosophy at Wesleyan University, 1883-85. In the latter year he was appointed professor of philosophy at Union College, where he remained until his retirement in 1918. Knox College conferred on him the LL.D. degree in 1914. Dr. Hoffman, contributed to many periodicals, and wrote: *The Sphere of the State* (1894, 1898); *The Sphere of Science* (1898); *Psychology and Common Life* (1904, 1907); and *The Sphere of Religion* (1908).

Hogge, James Myles. Scotch sociologist and politician, died at Hammersmith, England, October 27. He was born at Edinburgh, Apr. 19, 1873, and was graduated from the University of Edinburgh. Giving up his intention of becoming a teacher, he entered the ministry of the United Free Church of Scotland. After assisting the Rev. Dr. Cameron at the College Street Church in Edinburgh for several months, he resigned, in order to do settlement work in that city. He later moved to York and became a member of the City Council, investigating social conditions with B. Seebohm Rowntree, Joseph Rowntree, and Arthur Sherwell. He was elected as a Liberal to the House of Commons by East Edinburgh in 1912, and during his twelve years in Parliament he was particularly active in advocating temperance, insurance, and other reforms. Mr. Hogge served as joint chief whip of the Independent Liberal party, 1918-22. Besides assisting in the foundation of the Young Scots' Society, he was president of the National Federation of Discharged Sailors and Soldiers, 1919-20. He returned to politics with an appointment under the Chief Liberal Whip, Sir Robert Hutchison, in 1928. Hogge's writings include: *War Pensions and Allowances*; *Betting and Gambling*; *The Facts of Gambling*; *Licensing in Scandinavia*; *Aims and Achievements of Liberalism*; *Scotland Insured*; *Scots Home Rule*; *Pensions and*

Separate Allowances; and *A Book of Consolation*.

Hogue, Charles D. American Roman Catholic clergyman and educator, died at Baltimore, Md., March 6, at the age of sixty-five. Born at Cleveland, Ohio, he studied at St. Charles Seminary, near Baltimore, Md., then at St. Mary's Seminary, Baltimore, the Sulpician Seminary at Paris, and Trinity College, Dublin, Ireland; he was ordained at the last named institution in 1890. After a year at the Sulpician Solitude, near Paris, he returned to St. Charles Seminary, where most of the remainder of his life was passed. For a few years he was stationed at St. Patrick's Sulpician Seminary, Menlo Park, Calif., and from 1918 to 1925 he was president of St. Charles.

Holguin, Gen. Jorge.

Holland, Frank P. American editor and publisher, died at Dallas, Tex., January 18. He was born at Galveston, Tex., Sept. 22, 1852. His first editorial connection was with *Texas Stiftings*, Austin, Tex. He established *Texas Farm and Ranch* at Dallas in 1882, and was also the publisher of *Holland's Magazine*. He was mayor of Dallas, 1895-97, and declined reelection. Mr. Holland was prominent in many civic movements in the Southwestern section of the United States and issued the first call for the national conference on marketing and rural credits which met at Chicago in 1913. He was the first president of the Texas Editorial Association and was elected honorary president for life.

Holmes, William Rapley. American actor, died at Strathroy, Ont., January 12, at the age of fifty-nine. He was on the stage with traveling companies for many years, until success came to him as a member of the company supporting Nat Goodwin and Maxine Elliott in *An American Citizen*, *Nathan Hale*, and *When We Were Twenty-one*, in America and England. His greatest hit was made in the part of Joe Horne, the big, old, comfort-loving trader in *Rain*. Some of the plays in which he appeared, besides those already named, were *Miss Millions*, *The Right Girl*, *Arizona*, *The Squaw Man*, *The Virginian*, and *Hawthorne of the U. S. A.*

Hopkins, William Alonzo.

Hopwood, Avery.

Hopwood, Eric Clark. American editor, died at Cleveland, Ohio, March 18. He was born at North Eaton, Ohio, Feb. 7, 1877, and was educated at Adelbert College, Western Reserve University, graduating in 1901. He was principal of the Middletown, Ohio, high school, 1901-02, before joining the staff of the *Cleveland Plain Dealer* as police reporter. He rose through various grades to become editor of the newspaper in 1920. He served for several years as secretary of the American Society of Newspaper Editors and was its president at the time of his death.

Horne, John. Scotch geologist, died May 30. He was born at Campsie, Scotland, Jan. 1, 1848. After graduating from the University of Glasgow, he entered the service of the Geological Survey of Scotland, in 1867, and he remained in that service until he retired in 1911, having become assistant director in 1901. He first attracted the notice of scientists in 1879, when, with his colleague Benjamin Neeve Peach (with whom he was closely associated), he presented to the Geological Society a paper on the glaciation of the Shetland Isles. Of the official papers that Horne and Peach prepared together, the best known is *The Silurian Rocks of Britain*; vol. 4, *Scotland*, with notes by Sir Jethro Teall (1899). Dr. Horne was the recipient of many academic honors in Scotland, England, the United States, and other countries; they included the Murchison Medal and the Wollaston Medal.

Houghton, Arthur Amory. American manufacturer, died at New York, April 19. He was born at Brooklyn, N. Y., Dec. 20, 1866, and was educated at St. Paul's School, Concord, N. H. Mr. Houghton was a former president of the Corning Glass Company, Corning, N. Y., a business founded by his grandfather. He served as a Presidential elector on the Republican ticket and as alderman and member of the board of public works of Corning. He was a brother of Alanson B. Houghton, United States ambassador to Great Britain.

Howard, Sir Ebenezer. English town planner and founder of the "garden-city" movement in England, died at Welwyn Garden City, England, May 1. He was born at London, Jan. 29, 1850. He was educated at private schools and studied stenography. After working as private secretary to Dr. Joseph Parker, the well-known preacher, and in a solicitor's office, he went to America for his health in 1872, and worked in Nebraska and in Chicago. In 1877 he returned to England and joined the staff of Gurney & Sons, official reporters to the Houses of Parliament. He afterward became partner of William Treadwell, and remained in active stenographic practice until 1920. For many years before he founded the Garden City Association in 1899 he was interested in projects of social reform, especially in the solution of the two problems of the overcrowded city and the depopulated country. In 1898 he wrote *Tomorrow, a Peaceful Path to Real Reform* (republished in later editions as *Garden Cities of Tomorrow*). He

saw the realization of his plans in Letchworth, Welwyn and other "garden cities." His services in helping to solve the overpopulation problem in Great Britain were rewarded by the King by membership in the Order of the British Empire in 1924 and a knighthood in 1927. He was the president of the International Federation for Housing and Town Planning.

Howard, Keble. See Bell, John.

Howard, Ralph Hills.

Hoy, William E. First chief of the American Grave Registration Service in Europe, died at Oberhofen, Switzerland, January 20. He was educated in Europe and lived in France for many years. Until two years before his death he was associated with the Bedford Petroleum Company. He served in the British Army in South Africa in the Boer War as a member of Paget's Horse and received the Queen's Medal with three clasps. During the World War he organized an ambulance service for the French Army at Lyons, and when the United States entered the War he became a captain rising to the rank of lieutenant-colonel. He organized the Graves Registration Service, and later was placed in charge of octroi matters. He was said to have saved more than \$30,000,000 for the governments of Great Britain and the United States. He received the Distinguished Service Cross from Great Britain and the rank of chevalier of the Legion of Honor from France.

Hughitt, Marvin.

Hull, Arthur Eaglefield.

Hull, John Albert Tiffin. American politician, member of the U. S. House of Representatives, 1891-1911, died at Clarendon, Va., September 26. He was born at Sabina, Ohio, May 1, 1841, and was graduated from the Cincinnati Law School in 1862. He entered the Union Army, as first lieutenant in the Twenty-third Infantry in July of that year, and after having been promoted to captain, he was wounded and was discharged in October, 1863. Becoming a resident of Des Moines, Iowa, he was elected secretary of the Iowa Senate in 1872, and was reelected to each succeeding term until 1898, when he became secretary of state, and he was elected lieutenant-governor in 1885. He was seated in the Fifty-second Federal Congress in 1891, as representative of the Seventh Iowa District, being successively returned to his seat through the Sixty-first Congress. Mr. Hull acted as chairman of the congressional committee on military affairs, 1899-1911, and of the executive committee of the Republican congressional committee in 1898 and 1900.

Humphrey, Alexander Pope. American lawyer, died August 19, at Glenview, Ky., where he was born Jan. 26, 1848. After being graduated from Centre College in 1866, he studied law at the University of Virginia, and was admitted to the bar at Louisville in 1868, where he continued to practice, becoming solicitor for the Southern R. R. Co., and vice president and counsel for the Kentucky & Indiana Terminal R. R. Co. He was elected president of the American Bar Association for three successive years, and he was also president of the State Bar Association of Kentucky, and of the Louisville Bar Association. He was a trustee of the endowment fund of the University of Virginia.

Humphrey, Richard Lewis. American engineer, died at Philadelphia, November 2. He was born at Marblehead, Mass., Oct. 19, 1869, and was graduated from the Central high school of Philadelphia in 1888, and from the engineering department of the University of Pennsylvania in 1891. In 1892 he became associated with the Philadelphia Municipal Testing Laboratory and remained in the city's employ until 1899, when he was made general manager of the Buckhorn Portland Cement Company. He resigned in 1903 in order to become a consulting engineer specializing in testing and inspection. He was engaged for that purpose by the Pennsylvania Railroad Company, and the United States Geological Survey, as well as by various other organizations. At the St. Louis Exposition in 1904, Mr. Humphrey supervised the engineering work of the Portland cement exhibit and of the model testing laboratory of the cement manufacturers' association. During the World War he directed the building materials division of the Council of National Defense. He assisted in the organization of the American Society for Testing Materials, serving as its first secretary, and he was a director of the American Society of Civil Engineers. He also was elected first president of the American Concrete Institute, receiving its Wason Medal for two papers in 1924.

Humphreys, Milton Wylie.

Hunt, Elizabeth. American actress, died at Bay Shore, N. Y., April 18. Miss Hunt began her stage career at the age of twelve at the Boston Theatre, and later appeared at the Boston Museum for many years. Among the plays in which she acted were *The Cog*, *The Red Cockade*, *Little Corinne*, *Master Man*, *The Goat Song*, and *Blossom Time*. Her last appearance was in *New York Exchange*, in 1927.

Hutton, Levi W. American capitalist and philanthropist, died at Spokane, Wash., November 3. He was born at Fairfield, Iowa, Oct. 22, 1860, and attended district schools until he was eighteen. He then traveled in the West, going to Portland, Ore., in 1879, and later found work on a steamboat on Lake Pend Oreille, Idaho. Becoming a locomotive fireman on the Northern Pacific Railway, in 1883, he was advanced to engineer, and transferred to the Coeur d'Alene district of Idaho in 1887. He perceived the mining possibilities of the country and invested in the Hercules lead-silver mines, which yielded about \$19,000,000. Moving to Spokane, Mr. Hutton increased his fortune by further investment and speculations. Having acquired sufficient means, he satisfied his childhood ambition to provide for orphans by founding and endowing the Hutton Settlement near Spokane, in 1917. The institution comprised three hundred acres, including a motel farm, and was so arranged that the children could live in small groups, and attend public schools in order that they might associate with families in the neighborhood.

Ibañez, Vicente Blasco. See Blasco Ibañez, Vicente.

Ingersoll, Robert Hawley. American watch manufacturer, died at Denver, Colo., September 4. He was born at Delta, Mich., Dec. 26, 1859, and, moving to New York City in 1879, he at first manufactured rubber stamps and later engaged in the mail-order business. He decided in 1892 to try the experiment of manufacturing a "dollar watch," and his success made his name a household word in the United States. He was president and general manager of Robert H. Ingersoll & Brother, until the Waterbury Clock Company acquired control of his firm.

Izbicki, Joseph. See Michalewicz, B.

Jacques, Gen. Baron Alphonse de Dixmude.

Janacek, Leos.

Jaramillo, Edmund. Director of the School of Medicine of Santiago University, died at Santiago, Chile, September 26.

Jayne, Joseph Lee. Rear Admiral, N. S. Navy, died at Newport, R. I., November 25. Born at Brandon, Miss., May 30, 1863, he was graduated from the U. S. Naval Academy in 1882. Commissioned ensign on July 1, 1884, he rose through the successive grades and on Oct. 15, 1917, was made rear admiral. During the Spanish-American War, 1898, he commanded the torpedo boat, *Rodgers*, in the blockade along the Cuban coast. His subsequent commands included the cruisers, *Colorado* and *New York*. Admiral Jayne served as superintendent of the naval observatory from Oct. 16, 1911, until 1914, when he was on sea duty. When the United States entered the World War, Admiral Jayne was placed in charge of the naval air station at Pensacola, Fla., from April until October 29 of 1917. He commanded the *Mississippi* until Jan. 31, 1918, and from February 1 until September 13, he commanded Division 3 of Battleship Force 1 of the Atlantic Fleet. After the War, 1918-20, he commanded the Twelfth Naval District and retired in May, 1921.

Jehin, Leon-Noel-Joseph.

Jennings, Sidney Johnston.

Jodak. See Gumpenberg, Hanns Freiherr von.

Johns, Frank T. American politician, candidate for President of the United States in 1924 and in 1928 of the Socialist Labor party, died at Bend, Ore., May 20. He was drowned while trying to rescue a boy who had fallen into the Deschutes River. He was born at Sunbury, Pa., Feb. 23, 1889. In 1905 his family removed to the West, and he was educated at the high school, Spokane, Wash. After working on a ranch and as a carpenter, he became a letter carrier at Spokane. In 1915 he joined the Socialist Labor party. His political activities led to his dismissal from the postal service in 1920, and subsequently he worked at various trades.

Johnson, David Bancroft. American educator, died at Rock Hill, S. C., December 26. Born at La Grange, Tenn., Jan. 10, 1856, he was graduated from the University of Tennessee in 1877, receiving the A.M. degree in 1880. After an extensive educative experience, he saw need for a teachers' training school in South Carolina, and in 1886 led in the organization of Winthrop College, serving as president of the institution until his death. In addition to being president of the State Teachers' Association, 1884-88, Dr. Johnson was active in the National Educational Association, being president of the department of rural and agricultural education, 1909, of the normal school department, 1911, and of the national committee on normal school statistics, 1915-16. He was also president of the Southern Educational Association, in 1910. South Carolina College conferred on him the LL.D. degree in 1905, and the Presbyterian College of Clinton, S. C., honored him similarly in 1924.

Johnson, Rt. Rev. Joseph Horsfall. American Protestant Episcopal bishop died, May 16. Born at Schenectady, N. Y., June 7, 1847, he was graduated from Wil-

Iiams College in 1870, and from the General Theological Seminary in 1873. Entering the Protestant Episcopal ministry as deacon in the latter year, he was made priest in 1874. His first charge was at Holy Trinity Church, Highland, N. Y., 1873-79, and he subsequently served as rector at Trinity Church, Bristol, R. I., 1879-81, St. Peter's, Westchester, N. Y., 1881-86, and at Christ Church, Detroit, 1886-96. He was consecrated Bishop of Los Angeles in 1896. Bishop Johnson was awarded the D.D. degree by Nashotah House, Wis., in 1895, and that of S.D.T. by the General Theological Seminary in 1908.

Johnston, William Dawson.

Jones, Benjamin Franklin, Jr. American steel manufacturer, died at Pittsburgh, Pa., January 1. He was born at Pittsburgh, Apr. 21, 1868. He was the son of Benjamin Franklin Jones, founder of the firm of Jones & Laughlin, Ltd., extensive steel manufacturers, which became the Jones & Laughlin Steel Corporation, the second largest independent steel company in the United States. The younger Jones was graduated from Princeton in the class of 1891, and entered the business then, being made manager in the same year. In 1899 he became secretary and in 1900 president. When the firm was reorganized in 1902 as the Jones & Laughlin Steel Corporation, he became the president, continuing until 1923. After that year until his death he was chairman of the board of directors. He had other extensive business interests, and was noted as a philanthropist and as an art collector. He was a Republican and was chairman of the electoral college of Pennsylvania in 1908.

Jones, Herschell V. American editor and publisher, died at Minneapolis, Minn., May 24. He was born at Jefferson, N. Y., Aug. 30, 1861. He was educated at the Delaware Literary Institute, Franklin, N. Y. After publishing the *Jefferson, N. Y., Courier*, he removed in 1885 to Minneapolis and began work for the *Minneapolis Journal* as a reporter. He filled various positions before buying the newspaper. He was a member of the board of directors of the Associated Press in 1908. Mr. Jones was known as a collector of rare books and works of art.

Justo, Juan. Argentinian statesman, founder of the Socialist party in that South American Republic, died at Los Cardales, Argentina, January 8. He was sixty-three years old. He was a physician by profession, but devoted much of his time to finance and to the conduct of the newspaper, *La Vanguardia*, which he founded. He was famed as an orator and held the office of Senator.

Katte, Edwin Britton.

Keane, Rt. Rev. Patrick J. American Roman Catholic bishop, died at Sacramento, Calif., September 1. He was ordained into the Roman Catholic priesthood June 20, 1895, and was consecrated titular Bishop of Samaria, Dec. 14, 1920. On Mar. 17, 1922, he was appointed to the Diocese of Sacramento, where he remained until his death.

Keating, The Most Rev. Frederick William. English Roman Catholic prelate, archbishop of Liverpool, died Feb. 7. He was born at Birmingham, England, in 1859. He was educated at St. Chad's Grammar School, Birmingham; Sedgley Park; the Benedictine College at Douai, France, and Olton Seminary. He was ordained in 1882, and became administrator of St. Chad's Cathedral, Birmingham, in 1898. He was appointed to the see of Northampton in 1907 and was elevated to the archbishopric of Liverpool in 1921.

Kelly, Howard G.

Kenly, John Reese. American railway official, died at Wilmington, N. C., March 1. He was born at Baltimore, Md., Jan. 21, 1847. After serving in the Confederate Army in the Civil War, he entered railroad work in 1868 as a flagman with a surveying crew on the Pittsburgh & Connellsville R. R. He left that road to enter the employ of the Richmond & Petersburg R. R., the nucleus of the present Atlantic Coast Line R. R. system. He became successively superintendent, superintendent of transportation, assistant general manager, vice president, and in 1913, president.

Kenly, Colonel William Lacy.

Kennedy, John Russell. British journalist, died at Tokio, Japan, January 16. He was born at Bray, Ireland, Nov. 15, 1861, and was educated at Trinity College, Dublin. He became, in succession, soldier, war correspondent, and editor. He entered the service of the Associated Press in 1899 in London and became night manager. In 1907 he went to Japan as chief of the Far Eastern bureau, and in 1914 he became foreign director and adviser of the International News Agency of Japan. He held that post until 1923. He was once managing director of the Japan Times Publishing Company. He served as correspondent in war campaigns in Egypt and China. The Japanese Government decorated Mr. Kennedy with the Order of the Sacred Treasure, third class.

Kent, William. American politician and former mem-

ber of the national House of Representatives, died at San Rafael, Calif., March 13. He was born at Chicago, Mar. 29, 1849, and was graduated from Yale in 1887. He made his home in Chicago for twenty years, looking after his father's business interests there, in real estate and cattle. He was active in politics and philanthropy in Chicago, serving as founder and president of the Municipal Voters' League and as alderman. The family home had been in California since 1871, and in 1907 Mr. Kent removed there. In 1911 he was elected to Congress as an insurgent Republican and he was reelected as an independent in 1912 and 1914. He was one of the founders of the Progressive party. President Wilson appointed him to a place on the United States Tariff Commission in 1917. Mr. Kent was president of the Golconda Cattle Company of Nevada and the Kent-Jordan Company of North Carolina, and had other extensive business interests. He was credited with owning 1,000,000 acres in Mexico and large tracts in California. He presented Muir Woods, a scenic spot in Marin County, California, to the Government.

Keogh, Martin Jerome.

Kerr, John Brown. American soldier, brigadier-general, U. S. A., retired, died at Washington, D. C., February 27. He was born in Fayette County, Kentucky, Mar. 12, 1847, and was graduated from the U. S. Military Academy in 1866. He was assigned to the cavalry, and was on Western frontier duty, including fighting with the Indians, for 18 years. He received the Congressional Medal of Honor for bravery in an engagement with the Sioux, Jan. 31, 1891. In the Spanish-American War he was twice cited for gallantry in action and was wounded at San Juan Hill. He served in the Philippines as chief of staff, 1903-04. After acting as U. S. representative at the Paris Exposition of 1900 and as military attaché at Berlin, he reached the rank of brigadier-general in 1908. He was retired in 1909, after forty years' service.

King, William Benjamin Basil.

Kinsolving, Rt. Rev. George Herbert. American Protestant Episcopal Bishop of Texas, died at Austin, Tex., October 23. Born in Bedford County, Va., Apr. 28, 1849, he attended the University of Virginia, 1867-69, and was graduated from the Protestant Episcopal Theological Seminary, Va., in 1874. Made deacon in the year of his graduation and priest in 1875, he served as assistant at Christ Church, Baltimore, 1874-75, and as rector of St. Mark's, Baltimore, 1875-78, of St. John's, Cincinnati, 1878-81, and of the Church of the Epiphany, Philadelphia, 1881-92. Elected Assistant Bishop of Texas, 1892, he succeeded to the bishopric, July 11, 1893. The University of the South conferred on Bishop Kinsolving the D.D. degree, and Griswold College awarded him the S.T.D. degree in 1892.

Kirkwood, Joseph Edward.

Kittle, Charles Morgan. American merchant and former railroad executive, died at Chicago, Ill., January 2. He was born at Elkins, W. Va., Oct. 9, 1880. He left school at 14 and became a water boy for a railroad section gang; he was a station clerk for the West Virginia Central & Pittsburgh R. R., then in station and yard service for various other roads. In 1900 he became connected with the Illinois Central R. R. Co., in the maintenance-of-way and other departments; from 1910 to 1912 he was general freight claim agent of the same road and the Yazoo & Mississippi Valley; in 1912-16, assistant to the president of the same roads; in 1916-18, vice president; in 1918-20, during Federal control, Federal manager of the same roads and the Gulf & Ship Island R. R., the Mississippi Central R. R., and the New Orleans Great Northern. From 1920 to 1924 Mr. Kittle was senior vice president of the Illinois Central & Mississippi Valley R. Rs. In the latter year he left railroad service to become president of Sears, Roebuck & Company.

Klabund.

Kneass, Strickland Landis. American mechanical engineer, and inventor, died near Berwyn, Pa., November 25. He was born at Philadelphia, Jan. 7, 1861, and was graduated from Rugby Academy in 1876, and from Rensselaer Polytechnic Institute in 1880. Employed by William Sellers & Company, of Philadelphia, in 1888, he remained with that concern until his death, becoming manager of the injector department in 1895 and vice president in 1926. He devised numerous instruments in connection with steam power, that considered the most valuable being his injector for locomotive boilers. Mr. Kneass was awarded a diploma by the Chicago Exposition in 1893, and by the St. Louis Exposition in 1904. The Franklin Institute, of which he was a member, conferred on him the John Scott Medal in 1900 and in 1926. He frequently contributed to technical journals and wrote *Practice and Theory of the Injector*.

Knudsen, Gunnar.

Koessler, Karl Konrad.

Komarov, M. von Auffenberg-. See Auffenberg-Komarov, M. von.

Kraenzlein, Alvin C. American athlete, died at Wilkes-Barre, Pa., January 6. He was born at Milwaukee, Wis., Dec. 22, 1877. He studied dentistry at the University of Pennsylvania but never practiced, preferring to devote his time to coaching athletes and physical training. In this occupation he utilized the experience gained when he was the greatest all-around athlete in America, in his college days and later. For ten years he had few equals in athletic sports and held six amateur world's records in hurdle races and broad jumping. In the 1900 Olympic games at Paris he was one of the outstanding competitors, winning four firsts, in the 60-meter dash, the 110- and 200-meter hurdles, and the broad jump. His record of 23 3-5 seconds for the 220-yard low hurdles stood for 26 years.

Kreoh, Alvin William.

Kroeh, Charles Frederick. American educator, died at Orange, N. J., February 3. He was born at Darmstadt, Germany, Mar. 28, 1846, and was taken to America when very young. He was educated at the Central High School, Philadelphia, and after a brief experience in journalism became instructor in French and German at Lehigh University, 1868-71. In the latter year he became professor of modern languages at Stevens Institute, as a member of the original faculty of the institution. He taught at Stevens 55 years, retiring in 1927, and received the honorary degree of D.Sc. from Stevens in 1921. Dr. Kroeh was the author of many books on the teaching and study of languages. He made beekeeping his hobby and wrote scientific articles on apiculture.

Lachmund, Carl.

Lai, Cardinal Gaetano di. A cardinal of the Roman Catholic Church, died in Italy, October 24. Born at Malo, Italy, July 30, 1858, he was graduated from the Seminary of Vincenza and ordained into the Catholic priesthood in 1876. He was appointed under-secretary of the Congress of the Council in 1886, subsequently becoming its secretary. A student of canon law, he also was a member of a certificate commission. Pope Pius X appointed him cardinal in 1907, and he was made secretary of the Consistorial Congregation in 1908, serving until his death. He became Bishop of Sabina and Poggio Mirteto several years later. Cardinal Lai was chosen to open the holy door in St. Paul's Cathedral on Christmas Eve, 1924, and he was given the honor of closing it the following year.

Lamb, Frederick Stymetz.

La Mothe, John Dominique. American Protestant Episcopal missionary bishop, died at Baltimore, Md., October 25. Born at Ramsey, Isle of Man, June 8, 1868, he attended King William's College, Isle of Man, 1884-85, before going to the United States where he worked for a time on a Western ranch. He was graduated from the Theological Seminary in Virginia, in 1894. Ordained into the Protestant Episcopal ministry, he became rector of St. Paul's Church, Hamilton, Va., and in 1901 he was assistant at the Church of the Epiphany, Washington, D. C. He became rector of Christ's Church, St. Joseph, Mo., in 1903, and two years later he returned to the Church of the Epiphany as associate rector. He was rector of St. Paul's Church, New Orleans, La., 1907-1916, and in the latter year went to the Church of the Ascension, Baltimore, Md. He was consecrated Bishop, June 29, 1921, and placed at the head of the church mission in Honolulu. He had returned to the United States to attend a conference at Washington, at the time of his death.

Landstrum, Oscar Monroe. American politician, died at Helena, Mont., June 20. He was born at Galesburg, Ill., was graduated from Knox College and received a medical degree from the College of Physicians and Surgeons, Chicago, in 1894. After practicing medicine in Chicago for a short time he went to Helena, Mont., where he became editor of the *Montana Daily Record*. He was elected twice to the State House of Representatives, and served from 1903 to 1905. He was leader of the Montana delegation to the Republican national convention in 1912, was nominated by the Republicans of the State for United States Senator in 1918, and soon thereafter became Montana member of the Republican National Committee.

Lansing, Robert.

Lanza, Gaetano. American mathematician, engineer, and educator, died at Philadelphia, Pa., March 21. He was born at Boston, Mass., Sept. 26, 1848, and was educated at the University of Virginia as an engineer. He was an assistant instructor in mathematics there, 1870-72. He then went to the Massachusetts Institute of Technology as instructor and assistant professor of theoretical and applied mechanics, and remained as a member of the institute staff until 1911, when he be-

came professor emeritus. After 1875 he was professor of theoretical and applied mathematics, and after 1883 head of the department of mechanical engineering. At various times he was active as a consulting engineer. In 1906-11 he served as president of the Mathematical and Physical Club, and he held memberships in a large number of American and foreign mathematical and engineering societies. He was created in 1907 a Knight of the Order of Saints Maurice and Lazarus of Italy. Besides numerous papers and pamphlets, Professor Lanza wrote *Applied Mechanics* (1885; 9th ed., 1905) and *Dynamics of Machinery* (1911).

Larde, Jorge. Salvadorean scientist and director of the Seismological Institute at Tonacatepeque, Salvador, died July 24. He was a distinguished professor and writer and published many scientific works.

Larned, (William) Trowbridge. American editor and author, died at Elizabeth, N. J., February 10, at the age of sixty-two. He was born at St. Louis, Mo., and studied at Georgetown University and under private tutors. He contributed verses, essays, short stories, etc., to newspapers and magazines, and was employed by various publications as editor. From 1907 to 1910 he wrote "The Literary Zoo" for *Life*. He adapted Molnar's *The Devil* for George Arliss. He wrote several volumes of fairy tales and folklore. For a time Mr. Larned, as a young man, was a fence rider, cowboy, and rancher in several Western States.

La Tombelle, Fernand.

Lawrence, Seabury. American journalist, died at New York, August 21. He was born at Tarrytown, N. Y., Oct. 26, 1879, and for fifteen years he worked as a reporter on *The Evening Sun*, writing ship news for ten years, and also contributing the "Sun Dial" column and professional baseball articles. With the changed ownership of the *Sun*, Mr. Lawrence became sports writer on the New York *Evening Post* and he later became yachting and hockey editor of the New York *Times*, remaining with that paper until his death.

Lazard, Michel. French banker, died at Paris, July 9, at the age of sixty. He was a member of the well-known Paris banking firm of Lazard Frères, which has American affiliations. In recent years, when the franc fluctuated widely, M. Lazard aided the French Government in its financial operations. He was known also as a sportsman, deeply interested in the turf.

Lazenby, Maurice. American physician and surgeon, died at Baltimore, Md., September 17. He was born in 1877 and he was graduated from Johns Hopkins University, 1899, and from Johns Hopkins Medical School, 1903. Specializing in obstetrics and gynecology, he was a member of the staff of the Hospital for Women of Maryland, the Maryland General Hospital, and the Church Home and Infirmary.

Leavenworth, Francis Preserved. American astronomer and educator, died at St. Paul, Minn., November 13. He was born at Mount Vernon, Ind., Sept. 3, 1858, and was graduated from the Indiana University in 1880. He was on the staff of the Cincinnati Observatory, 1880-82, and then becoming assistant at the McCormick Observatory of the University of Virginia, he remained there until 1887. He then was appointed director of the Haverford College Observatory. Joining the faculty of the University of Minnesota in 1892, he served as assistant professor of astronomy until 1897, and as professor, 1897-1927. On his retirement in 1927, he was made professor emeritus. Mr. Leavenworth was a fellow of the Royal Astronomical Society of England, and he belonged to the Astronomical and Astro-physical Society of America. He wrote: *Double Star Observations* (1888); *Proceedings of the Haverford College Observatory* (1891); *Parallax Lal.*, 1196 (1892); and he compiled, *Photographs of Eros for Solar Parallax* (1902).

Leavitt, Charles Wellford.

Leavitt, Frank McDowell.

Leguía, Dr. German y Martinez. Peruvian statesman, died at Lima, Peru, November 21. Besides being at one time judge of the supreme court, he held numerous political offices. As minister of foreign affairs in 1911, he negotiated boundary and peace agreements with Ecuador and Bolivia. He was prime minister in 1919 and 1921, during the presidency of Augusto B. Leguía. Charged with attempting to overthrow his cousin's government in 1923, he and his sons were arrested and deported, but were later allowed to return to Peru.

Lennox, Charles Henry Gordon. See Richmond and Gordon, Duke of.

Lewis, James Henry. American actor, died at Pawtucket, R. I., November 1, at the age of seventy-eight. Born in New York, he moved to Rhode Island when a child, and there commenced his stage career by playing in amateur performances. Returning to New York, he acted for more than fifty years, appearing with Edwin Booth, Mrs. Thomas Whiffen, David Warfield, William Hodge, and other prominent stage people.

Lichnowsky, Prince Karl Max von.

Lima, Jaime de Magalhães. Portuguese journalist and patriot, died in Portugal, December 8. Born in Brazil, 1859, he worked for the establishment of the Portuguese Republic, visiting foreign countries to foster public approval. He also urged the abolition of the monarchy through the newspaper, *O Século*, of which he was editor-in-chief. After the Republic was proclaimed, Oct. 5, 1910, Lima became minister of instruction, and was later elected senator. He was a grand master of Portuguese freemasonry.

Lima, Manuel de Oliveira de.
Lincolnshire, First Marquis of.
Li Yuan-Hung.

Locke, James. American author, chemist, and educator, died at New Haven, Conn., February 12. He was born at Buffalo, N. Y., Nov. 28, 1869. After being graduated from Yale, 1890, and receiving a Ph.D. from Heidelberg, Germany, in 1895, he became an instructor in chemistry at Yale, 1897-1902. He was professor of chemistry at the Massachusetts Institute of Technology, 1902-03. In the latter year ill health compelled him to give up teaching, and he adopted journalism and writing as a profession. He was associate editor of the *Baltimore News*, 1911-23, also of the *Baltimore American*, 1920-23. Besides contributing to various scientific and popular publications, he translated Menschutkin's *Analytical Chemistry* (1895), and wrote the novels, *The Stem of the Crimson Dahlia* (1908) and *The Plotting of Frances Ware* (1909).

Lockwood, William F. American physician and educator, died at Elkridge, Md., October 17, at the age of seventy-five. He was graduated from the College of Physicians and Surgeons, in 1875, where, after practicing in Baltimore for two years, he became demonstrator in anatomy. He left the college to accept a position as resident physician at St. Joseph's Hospital, later becoming chief of the staff, and he was also connected at one time with St. Agnes Hospital. Returning to the College of Physicians and Surgeons as professor, he was made dean in 1912. Several years after the medical school of the University of Maryland had merged with his college, in 1915, Dr. Lockwood was appointed dean of the combined institution, a position which he held until his death.

Loewenstein, Alfred.

Logan, James H. American jurist and horticulturist, originator of the loganberry, died at Oakland, Calif., July 16. He was a former district attorney at Santa Cruz, Calif., and at one time judge of the Superior Court there, but was known chiefly as the originator of the loganberry, named for him, and of mammoth blackberries. The loganberry is a hybrid blackberry and raspberry. It was presented by Judge Logan to the University of California, "for the benefit of the people of the nation," and is now cultivated in many places.

Longfellow, Alice Mary. Daughter of Henry Wadsworth Longfellow, died at Cambridge, Mass., December 7. She was the "Grave Alice" of *The Children's Hour* and was born in the Craigie House, Cambridge, in 1850, where she spent her life, often visiting scenes mentioned in her father's poems. Miss Longfellow was a founder of Radcliffe College, later serving on the board of associates. She was Massachusetts' vice regent of the Mount Vernon Association.

Lorentz, Hendrik. Antoon.

Lowell, Daniel Ozro Smith. American educator and Esperantist, died at Malden, Mass., March 12. He was born at Denmark, Me., Apr. 13, 1851. After graduating from Bowdoin College in 1874, and from the Maine School of Medicine in 1877, he practiced medicine for a year, but left the profession to become a teacher at Lisbon Falls, Me. For another year he was editor of *The Golden Argosy*, published by Frank A. Munsey. He taught in schools and academies in Maine until 1884, and in that year became a master in the Roxbury Latin School, Boston, Mass. From 1909 until his retirement in 1921 he was head master of the school. Bowdoin College conferred on him the degree of Litt.D. in 1909. Dr. Lowell was one of the leading Esperantists in America and published books on the universal language as well as on other subjects. He helped in the translation of the Gospel of St. John into Esperanto.

Loza, Eufrazio. An Argentinian statesman and former Governor of Córdoba, died at Buenos Aires, September 25. Besides being a member of the Court of Appeals, Dr. Loza was once in the Cabinet.

Ludlum, Albert C. American engineer, inventor, and manufacturer, died at New York, February 16. He was born at Brooklyn, N. Y. He was educated at the public schools of Brooklyn and began his business career as a clerk in a bank. While there he invented an adding machine. In 1889 he became connected with the Kennedy & Pierce Co., manufacturers of mining machinery at Denver, Colo. In 1906 he organized the New York Engineering Company for the manufacture of gold dredging machinery.

Lummis, Charles Fletcher.

Luther, Flavel Sweeten.

Lynch, John Gilbert Bohun, English author, died in London, October 2. Born May 21, 1884, he attended University College, Oxford, where he became interested in boxing. While doing newspaper work he wrote independently, but as his books and articles became popular, he gave up journalism. Besides his contributions to numerous magazines, Mr. Lynch wrote novels, sketches, and histories of pugilism and boxing, including: *Glamour* (1812); *Cuke* (1913); *The Complete Amateur Boxer* (1913); *Prominent Pugilists of To-day* (1914); *Unofficial* (1915); *The Complete Gentleman* (1916); *The Tender Conscience* (1919); *Forgotten Realms* (1920); *Max Beerbohm in Perspective* (1921); *Knuckles and Gloves* (1922); *A Perfect Day* (1923); *A Muster of Ghosts* (1924); *A History of Caricature* (1926); *The Prize Ring* (1926); and *Respectability* (1927), which is considered his best book.

MacChesney, Clara Taggart. American painter, died in London August 6. She was born at Brownsville, Calif., in 1861, and, after studying painting under Virgil Williams in San Francisco, she came to New York to study under H. S. Mowbray and James Carroll Beckwith. Later she went to the Colarossi School in Paris, where she worked under Courtois and Girardot. She painted peasant pictures, particularly of children, as well as portraits. Miss MacChesney won two medals at the Chicago Exposition of 1893, and the following year she won the Dodge Prize in New York. She received three medals at the Colarossi School, and the gold medal at the Philadelphia Art Club in 1900, and in 1901 her picture, "A Good Story," won the second Hallgarten prize of the National Academy of Design, in New York. She also exhibited in the Paris Salon in 1896 and 1898, and in the Saint Louis Exposition in 1904.

McCormick, Samuel Black.

McCutcheon, George Barr.

MacDonald, Charles.

MacDonald, Jessie Claire. American educator, died August 12. She was born at Indianapolis, Jan. 24, 1869, and after being graduated from Wellesley College in 1888, she continued her studies at Columbian (later George Washington) University, the Sorbonne, and the University of Pennsylvania. In 1913 she became principal of the National Cathedral School for Girls in Washington, D. C. She was at one time a trustee of Wellesley College.

Macdonald, John Kay. Canadian life insurance leader, died at Toronto, Ont., July 4. He was born at Edinburgh, Scotland, Oct. 12, 1837, and was taken to Canada when he was eight years old. He was the founder, president, and manager of the Confederation Life Association, and was active in many religious, educational, and philanthropic organizations in Canada. He was several times president of the Canadian Life Insurance Officers' Association and was a fellow of the Canadian Insurance Institute.

McGivney, Patrick J.

McGraw, James J.

MacHugh, Augustin. American playwright and actor, died at New York, August 24. While acting in Keith & Proctor's vaudeville company in New York City, he wrote his most successful play, *Officer 666*, which ran for a year on Broadway in 1912. Besides vaudeville sketches he was the author of several other plays, including: *Value Received* (1913); *What Would You Do?* (1914); *Search Me* (1915); *The Meanest Man in the World* (1920). He also collaborated with A. D. Leavitt in *It's Up to You* (1920), and he took the lead in his own play, *True to Form*, which was produced in Los Angeles, 1921.

McKee, Oliver. American journalist, and publisher, died at Randolph, N. H., August 29. He was born in Brooklyn, N. Y., and was graduated from Yale in 1884. He then worked on newspapers in New York and Boston, and on *The Times* (London). While in England he was engaged in the encyclopaedic and other work, traveling to India, China, and Japan. After his return to the United States Mr. McKee became connected with the Yale University Press, and he was assistant editor of *The Pageant of America* when he died.

MacLeod, Malcolm Hugh.

McNaughton, James. American locomotive manufacturer, died at Bronxville, N. Y., July 27. He was born at Queensville, Ont., Aug. 6, 1859. After working at Woodbridge, Ont., for a manufacturer, he went to the United States, and in 1881 entered the employ of the Northern Pacific as shop foreman at Brainerd, Minn. In 1889 he became the division superintendent of rolling stock of the Northern Pacific, and in 1890 superintendent of motive power of the Wisconsin Central (now part of the Minneapolis, St. Paul & Sault Ste. Marie R. R.). In 1899 he was made superintendent of the Brooks Locomotive Works, Dunkirk, N. Y.,

and when the American Locomotive Company was organized he was placed in charge of the Brooks and Schenectady, N. Y., plants as general manager. In 1910 Mr. McNaughton was made vice president of the company, in charge of manufacture. He resigned to become president of the Eddystone Munitions Company, at Ed-dystone, Pa., 1915-20, and in the latter year was appointed to the position of vice president of the Baldwin Locomotive Works, in charge of the New York office.

McVea, Emilie Watts. American educator, died at Cincinnati, Ohio, July 27. She was born at Clinton, La., Feb. 17, 1867. She was graduated from St. Mary's School, Raleigh, N. C., in 1884, and subsequently studied at Cornell University and Georgetown University. Her first teaching position was at St. Mary's School, of which she became principal; from 1903 to 1904 she was instructor in English at the University of Tennessee. From 1906 to 1916 she was assistant professor of English at the University of Cincinnati and from 1909 to 1916 dean of women. From the latter year to 1925 she was president of Sweet Briar College in Virginia, retiring to become president emerita. In 1918-19 Miss McVea was a lecturer for the Y. W. C. A. and the Federal Food Administration. She was secretary-treasurer of the Southern Association of College Women, 1903-04, and was also a member of the Virginia State Board of Charities and Corrections, 1822. She received the honorary degree of Litt.D. from the University of Cincinnati in 1916 and that of LL.D. from the University of North Carolina in 1921.

Madden, Martin Barnaby.
Magalhães, José Castro. Brazilian jurist, died at Bello Horizonte, Brazil, June 20.

Mair, Alexander William. Scotch classical scholar and educator, died in Edinburgh in November. Born at Deerhill, Banffshire, June 9, 1875, he was graduated from the University of Aberdeen in 1893; he then went to Gonville and Caius College, Cambridge, where he received his degree in 1898. Returning to Scotland, he lectured on Greek at the University of Aberdeen, 1898-99. He undertook a similar occupation at the University of Edinburgh in the latter year, and in 1903 was appointed professor, holding that chair until his death. He was elected Fellow of Gonville and Caius for the years 1899-1905. Professor Mair served as classical examiner at London University, 1919-23. The University of Aberdeen in 1911 conferred on him the degree of Litt.D. Besides contributing many verses to current periodicals and writing several articles for Hasting's *Encyclopaedia of Ethics*, he published two works, an edition of Hesiod, with an introduction, translation, and appendices (1908); and a volume of the Loeb series, comprising the writings of Callimachus and Lycophron (1921).

Malinowski. See Boganoff, Alexander Alexandrovitch.
Mallinckrodt, Edward.

Mallon, George Barry. American journalist, died at Baltimore, January 13. He was born at Malone, N. Y., May 20, 1865. After graduation from Amherst College, he entered journalism in New York as a member of the staff of the *Commercial Advertiser*, in 1887. From that paper he went to the *Sun*, and in 1903 became city editor of the latter paper. He held the post for ten years and assisted in the training of many men later prominent in newspaper work. He left the *Sun* to become literary adviser of the Butterick Company, publishers of magazines. For ten years before his death he was director of publicity of the Bankers Trust Company of New York, and compiled financial reviews of conditions in England, France, and Canada.

Malmgren, Finn. Swedish meteorologist with the Noble polar expedition, died in the Arctic, in June, after the disaster to the *Italia*. (See POLAR RESEARCH.) He was born at Falun, Sweden, in 1895 and studied at the Universities of Stockholm and Upsala before becoming a student of meteorology as assistant to Professor Hamberg at his altitude observatory at Portetjåkko. In 1922 he joined the staff of the *Maud*, which carried Amundsen's polar expedition of that year and which was then entering on the second stage of her voyage in the northern basin. For two years the *Maud* drifted with the polar currents, returning eventually through Bering Strait in 1925. In those three years, 1922-25, Mr. Malmgren not only served as meteorologist to the expedition under Dr. H. U. Sverdrup, the chief of the scientific staff, but pursued his studies to such good advantage that he was able to take his degree of Master of Science on his return to Sweden. Subsequently he won his doctorate. In the meantime, in 1926, he took part in the flight across the north polar basin in the *Norge*, and contributed a chapter on "Weather and Weather Warnings During the Polar Flight" to the official narrative of the expedition written by Captain Amundsen and Lincoln Ellsworth. In 1928 he was appointed lecturer and curator at Vastmanlands Dala College at Uppsala, Sweden, but

gave up the post to accept appointment as meteorologist of the Noble expedition. When the *Italia* was wrecked, Dr. Malmgren and two companions, Majors Mariano and Zappi, were separated a few days after the disaster from the rest of the party, and endeavored to make their way across the ice afoot, in the hope of meeting a rescue party or reaching a human settlement. According to the account given by Malmgren's companions, he was unable to go on, his legs having been frozen, and he begged them to leave him, in order to save themselves and possibly others. Their story led to much controversy.

Manners, John Hartley.
Mansfield, Brig. Gen. Samuel Mather.
Mantell, Robert Bruce.

Marcel, Alexandre. French architect, died at Neuilly, France, July 1. He was chief architect for the French Government, and the designer of the monument to the Lafayette Escadrille, dedicated three days after his death. M. Marcel was a member of the Institut de France and an officer of the Legion of Honor, and holder of numerous foreign decorations. Among the structures which he designed are the Senate building at Bucharest, Rumania; the Rodin Museum at Paris, and the Hippodrome at Ostend, Belgium.

March, Francis Andrew, Jr.
Marie, Dowager Empress of Russia.
Mason, The Rev. Dr. Arthur James. English clergyman and author, died at Canterbury, England, April 24. Born May 4, 1851, he was educated at Repton School and at Trinity College, Cambridge, and was a fellow of Trinity College, 1873-84, and assistant tutor, 1874-77. After serving as canon of Truro, 1877-84, and vicar of All Hallows, Barking, 1884-95, he became fellow of Jesus College, 1896-1903; Lady Margaret Professor of Divinity, Cambridge, 1895-1903; vice chancellor of Cambridge University, 1908; master of Pembroke College, Cambridge, 1903-12, and canon of Canterbury since 1895. His publications, mainly on church history, included: *The Persecution of Diocletian* (1875); *Commentary on the Thessalonians and First Epistle of St. Peter* (1879); *The Faith of the Gospel* (1887); *The Relation of Confirmation to Baptism* (1893); *Historic Martyrs of the Primitive Church* (1905); *The Church of England and the Episcopacy* (1914); and *What Became of the Bones of St. Thomas* (1920), a learned study of the question whether bones discovered in 1888 are really those of St. Thomas à Becket.

Mathews, Joseph McDowell.
Mauder, Edward Walter.
Maver, William, Jr.

Maximow, Alexander A. Russian physician and educator, died at Chicago, December 4, at the age of fifty-two. Born at St. Petersburg, he taught histology and embryology for nearly 20 years, until the revolution of 1917. He then went to the University of St. Petersburg, as professor, but, forced by Bolsheviks' activities to escape from the country in 1922, he came to the United States, and in the same year was appointed professor of anatomy of the University of Chicago, holding that position until his death. While at the university, he proved, by experiments made with F. J. Lang, that tuberculosis nodules grow either from the lung tissues or from white blood corpuscles. Dr. Maximow represented Russia at the International Zoological Congress in the United States in 1907.

Maxwell, Jonathan Dixon.
Mead, William Rutherford.
Mechem, Floyd Russell. American lawyer and educator, died at Chicago, Ill., December 11. Born at Nunda, N. Y., May 9, 1858, he was admitted to the bar in 1879 and practiced at Battle Creek, 1879-87, and at Detroit, 1887-93. Having been professor and dean of the Detroit College of Law, 1891-92, he was appointed Tappan professor at the University of Michigan in the latter year, where he remained until 1903, also serving on the State Board of Law Examiners, 1895-1903. He then went to the University of Chicago, where he taught until his death. In addition, he belonged to the first district appeal board of the Northern District of Illinois, 1917-18. He lectured during the summer sessions at Columbia University in 1919 and 1920, at the University of Colorado in 1922, and at Stanford University in 1923. He was an authority on partnership and agency law. Professor Mechem received the A.M. degree from the University of Michigan in 1894, and the LL.D. degree in 1912. He was a reporter on agency for the American Law Institute and, besides contributing to various law publications, wrote the following books: *Agency* (1889, 2nd ed., 1914); *Public Officers* (1890); *Mechem's Hutchinson on Carriers* (1891); *Cases on Agency* (1893); *Cases on Partnership* (4th ed., 1924); *Elements of Partnership* (2nd ed., 1920); *Sales of Personal Property*, 2 vols. (1901); *Outlines of the Law of Agency* (3d ed., 1923); and *Cases on Damages* (3d ed., 1902); *Mechem and Gilbert's Cases on Damages* (1909).

Meeker, Ezra. American author and pioneer on the Oregon trail, died at Seattle, Wash., December 3. Born at Huntsville, Ohio, Dec. 29, 1830, he received little formal education, working as a printer's apprentice and journeyman printer. Starting in 1852, he traveled to Puyallup, Wash., by oxcart, one of the first to cross the frontier, near Portland, Oreg. Settling in Puyallup, he raised hops. He again crossed the continent, to Washington, D. C., in an oxcart in 1906. After retiring from business he worked for the preservation of records and landmarks of the Oregon trail, becoming president of the Pioneers of America. Mr. Meeker wrote: *Washington Territory West of the Cascade Mountains* (1870); *Hop Growing in the United States* (1883); *Pioneer Reminiscences of Puget Sound* (1905); *The Oregon Trail* (1907); *Uncle Ezra's Pioneer Stories for Children; Eighty-five Years of a Busy Life* (1916); *Seventy Years of Progress in Washington* (1921); *Ox-Team Days* (1922); and *Kate Mulhall* (1926).

Menconi, Frank G. American sculptor, died at Union City, N. J., April 24. He was born at Barga, Italy, Apr. 24, 1884. He was educated abroad until his sixteenth year, when he went to America with his parents. He continued his studies at Cooper Institute, New York. He designed the temporary Victory Arch erected in New York for the homecoming of the American soldiers from the World War, and, among other works, the Boston memorial to Mrs. Mary Baker Eddy and the sculptural decorations on the new extension of the University of Illinois. He revived an ancient art known as "graffito," a process of engraving on cement in colors. Specimens of the art were used as decorations of public buildings at Washington, D. C.

Meredith, Edwin Thomas.

Merrill, William Bradford.

Metaxas, Sir Demetrios George. Greek diplomat, died at London, England, February 1. He was born at Syra, Greece, and was educated at Athens, where he entered the diplomatic service at the foreign office. He served as a diplomat at Rome, Berlin, Belgrade, and London. He was secretary of the conference of Berlin, 1880, and also during the negotiations at Prevesa for delimiting the new Greco-Turkish frontiers. He was Greek minister to Great Britain, 1895-1908. He retired from the diplomatic service several years before his death and made his home in London. In 1906 King Edward VII conferred on him the Grand Cross of the Royal Victorian Order.

Meyer-Waldeck, Alfred.

Michalewicz, E. Jewish leader of the Socialist party in Poland, died at Warsaw, October 30. He was born at Brest-Litowsk, in December, 1876, his real name being Joseph Izbiński. He early adopted the pseudonym, B. Michalewicz, and under the influence of socialists, he became active in politics at the age of seventeen. He was one of the founders of the Bund, the Jewish Socialist Labor party, with which he worked during the remainder of his life. He was several times exiled and imprisoned for his activities, once escaping from a five-year exile to Archangel. Besides his interest in Socialism, he contributed to the development of Yiddish literature in Eastern Europe.

Michelena, Santiago. Dominican banker and sugar grower, died April 29. He was born in Porto Rico. He resided in the Republic of Santo Domingo for many years and was one of the leaders in the financial and sugar interests of the country. Ten years before his death he sold his banking house, S. Michelena & Company, to the National City Bank interests of New York, but retained his connection with the house in an advisory capacity.

Miles, Basil.

Mills, William Corless. American archaeologist and educator, died at Columbus, Ohio, January 18. He was born at Fyrmont, Ohio, Jan. 2, 1860, and received a B.Sc. from Ohio State University in 1898. In the same year he became curator and librarian of the Ohio State Archaeological and Historical Society, and a year later curator of the Ohio State University Museum. He was connected with Ohio State University for 46 years. He was a leading authority on the Indian mounds of Ohio, and passed most of his time investigating them and other Indian remains. He was the author of *Archaeological Atlas of Ohio* (1914); *Map and Guide to Fort Ancient* (1920); and other reports and papers on kindred subjects.

Minor, Charles Launcelot. American physician, died at Biltmore Forest, N. C., December 26. Born at Brooklyn, N. Y., May 10, 1865, he was graduated from the medical school of the University of Virginia in 1888. After serving in hospitals in New York and Vienna, he practiced in Washington. He moved to Asheville, N. C., in 1895, where he was instrumental in creating an important centre for the cure of tuberculosis. Dr. Minor was president of the American Climatological and Clinical Association, 1912-13, of the National Association for the Study and Prevention

of Tuberculosis, 1917-18, and of the Southern Medical Association, 1923-24. He was also a director of the National Tuberculosis Association. The University of North Carolina conferred on him the LL.D. degree. He contributed a chapter on "Symptoms and Diagnosis" to Klebs' work *Tuberculosis* (1909).

Miron, Salvador Diaz.

Molitor, John. American architect and engineer, died at Philadelphia, April 19, at the age of fifty-four. He was city architect of Philadelphia and designer of virtually all of the buildings of the Sesqui-Centennial Exposition, held in 1926. Mr. Molitor was appointed city architect in 1924. Before that time he had been chief of the division of housing and sanitation of the city government, to which office he was appointed in 1914, when it was created.

Montague, Andrew Philip. American educator, died at Panama City, Fla., December 3. Born in Essex County, Va., Sept. 27, 1854, he was graduated from the University of Virginia in 1875, receiving the A.M. degree from Columbian (now George Washington) University in 1879 and the Ph.D. degree in 1888. While at Columbian, he served as Latin tutor, 1875-79, adjunct professor, 1879-82, and professor, 1882-97, being also principal of the preparatory school, 1884-93, and dean of the university, 1895-97. He was appointed president of Furman University in 1897, accepting similar positions at Howard College, Birmingham, Ala., 1902-12, and at Columbia College, Lake City, Fla., 1912-19. Going to Mercer University, Macon, Ga., in 1919 as professor of Latin and public speaking, he became dean in 1923, vice president in 1924, and acting president in 1927. Dr. Montague was president of the Florida Educational Association from 1915 until his death. Richmond College conferred on him the LL.D. degree in 1896. He edited *Selected Letters of Cicero* (1890); and *Selected Letters of Pliny* (1893).

Montague, Charles Edward.

Montgomery, George Alexander. Canadian railroad official, died at Sault Ste. Marie, Ont., June 27. He was born at Bradford, Ont., Feb. 11, 1871, and after a public school education began his railroad career at Newmarket, Ont., with the Grand Trunk Railroad. He remained with the road three years, and in 1889 went to the Canadian Pacific, rising to the superintendency of the Superior division by 1900. In 1902 he became chief clerk of the Algoma Eastern Railway, and in 1916 president of that road and vice president and general manager of the Algoma Central and Hudson Bay Railway.

Monty, Rodolphe. Canadian lawyer and former secretary of state, died at Saint Hyacinthe, P. Q., December 1. Born at Montreal, November 30, 1874, he attended Ste. Marie de Monnoir College, and was graduated from the Université Laval, Quebec, and from the law school of McGill. Called to the bar in 1897, he practiced until his death in Montreal and Quebec, being made King's counsel in 1909. He was appointed secretary of state in September, 1921, by Arthur Meighen, the Conservative Premier, but the administration was defeated in the December elections of that year. Mr. Monty was treasurer of the council of bar for two years, and examiner for the bar for five years. He was also president of La Société de Repatriement et de Colonisation de la Province de Quebec.

Moore, Francis. American soldier, brigadier general, U. S. Army, retired, died at San Antonio, Tex., May 1. He was born in Scotland, Apr. 6, 1841. He entered the Union Army as a private in the First Colorado Cavalry in 1861, and served in the Civil War, being successively promoted to sergeant, captain, major and lieutenant colonel. He received brevet promotion to the last named rank for "faithful and meritorious service during the war." After the close of the Civil War he entered the regular army as a second lieutenant in the cavalry, and rose through the various grades until he attained the rank of brigadier general in 1901. General Moore was retired by operation of law in 1905.

Morales, Ramon Saenz. Nicaraguan poet, died at Managua, Nicaragua, September 6, at the age of 38. His verses were popular in Central America and South America.

Mora y del Rio, Archbishop José.

Moreira, A. Barros. Brazilian Ambassador to Belgium, died at Brussels, August 11. Being minister to Belgium in 1921, he was made ambassador when President Pessoa raised the rank of the Brazilian Legation at Brussels to that of an Embassy.

Morgan, James Appleton.

Morgan, James Morris. Veteran of the Confederate States Navy and Army and writer, died at Washington, D. C., April 22. He was born at New Orleans, La., in 1845, and was a student at the U. S. Naval Academy at the outbreak of the Civil War, in 1861. He left his studies to enlist in the Confederate Navy, and served on the *Alabama* under Semmes. Later he

commanded a battery in the defense of Richmond, Va. After the war he was in the Egyptian Army, and then returned to assist as an engineer in the erection of the Statue of Liberty in New York Harbor. He served as U. S. Consul at Melbourne, Victoria, in the first Cleveland administration, and on his return to the United States became assistant manager of the International Banking Corporation. His book, *Recollections of a Reeler*, telling of his Civil War experiences and published a few years before his death, was favorably reviewed.

Mosher, Eliza Maria.

Motoda, The Rt. Rev. Joseph Sakunoshin. Japanese clergyman, bishop of the first independent Japanese diocese of the Nippon Sei Ko Kwai (Holy Catholic Church of Japan), died at Osaka, Japan, April 16. He was born at Kumamoto, Japan, Feb. 2, 1861, of Christian parents. He studied at St. Paul's College, Tokyo, also at Kenyon College, Gambier, Ohio, the University of Pennsylvania, Bexley Hall, and the Philadelphia Divinity School. He was ordained in 1896, and returned to Japan as a missionary. He then became headmaster of St. Paul's College and Middle School, and later Japanese president of St. Paul's University, before his election as bishop in 1923. He assumed charge of his diocese immediately after the great earthquake and labored hard to reconstruct his charge. In 1924, the Philadelphia Divinity School conferred the degree of D.C.L. on Bishop Motoda, following his degree of D.D. from Kenyon College in 1922. In 1925 he visited the United States and was highly honored by the Protestant Episcopal General Convention at New Orleans, La.

Mowat, Herbert Macdonald. Canadian jurist, died at Toronto, Ont., April 24. He was born at Kingston, Ont., Apr. 11, 1863. He studied at Queen's University and received his law degree there in 1886. In the same year he entered law practice in Ontario, and quickly rose to a prominent position among the younger attorneys of the Dominion. In 1899 he became a Queen's Counsel. He was elected to the Canadian House of Commons in 1917, and in 1921 was appointed to a place on the bench of the Supreme Court of Ontario. He was an active member of the British Empire League of Canada. He was an officer in the Queen's Own Rifles, and saw active service in the World War, winning promotion to the rank of major.

Mowbray, Henry Siddons.

Mullins, Edgar Young. American Baptist clergyman, died at Louisville, Ky., November 23. Born in Franklin County, Miss., Jan. 5, 1860, he attended the Agricultural and Mechanical College of Texas, 1876-79, and was graduated from the Southern Baptist Theological Seminary in 1885, later continuing his studies at Johns Hopkins University, 1891-92. Ordained into the Baptist ministry in 1885, he held a pastorate at Harrodsburg, Ky., and three years later he was called to the Lee Street Church in Baltimore, while from 1896 until 1899, he served at the First Church, of Newton, Mass. Dr. Mullins was made president of the Southern Baptist Theological Seminary at Louisville in 1899, a position which he retained until his death. He was secretary of the board of foreign missions at the Southern Baptist Convention, 1895-96, and president of the convention of May, 1921-24; at the time of his death he was president of the Baptist World Alliance, having served since 1923. Carson and Newman College, Tenn., conferred the D.D. degree on Dr. Mullins in 1896, and McMaster University, Toronto, Canada, honored him similarly in 1925. He also received the LL.D. degree from Richmond College, Va., and Baylor University. Besides editing *The Evangel*, of Baltimore, 1890-95, Dr. Mullins wrote the following books: *Why is Christianity True?* (1905); *The Axioms of Religion* (1908); *Baptist Beliefs* (1912); *Freedom and Authority in Religion* (1913); *Commentary on Ephesians and Colossians* (1913); *The Life in Christ; The Christian Religion in its Doctrinal Expression; Talks on Soul Winning* (1920); *Spiritualism a Delusion* (1920); and *Christianity at the Cross-Roads* (1924).

Munkittrick. See Talbot, Howard.

Murray, Sir John.

Newcastle, Seventh Duke of.

Newman, Frances. American author and librarian, died suddenly at New York, October 22. She was born at Atlanta, Ga., about 1888, and was graduated from the Library School of the Carnegie Library of Atlanta in 1912. She returned to that institution, after acting for a year as librarian at the Florida State College for Women. Miss Newman contributed to several magazines, and in 1924 her story, *Rachel and Her Children*, published by the American Mercury, won the O. Henry prize. She also wrote, *The Short Story's Mutations* (1924), and *The Hard Boiled Virgin* (1926), a novel which met with bans from censors and diverse opinions from critics. Her last book was *Dead Lovers* (re *Faithful Lovers*) (1928); and her translations of

the stories of Jules Laforgue were unpublished at the time of her death.

Nichols, William Henry, Jr. American manufacturer and chemist, died at Center Island, N. Y., at the age of fifty-four. He was born at Brooklyn, N. Y., the son of William Henry Nichols, a well-known chemist and manufacturer. The younger Nichols was educated at the Brooklyn Polytechnic Institute and the School of Mines of Columbia University, 1894. He was vice president and a director of the Allied Chemical & Dye Corporation and an official or director of several other large chemical manufacturing concerns. He was a member of the American Chemical Society, the Society of the Chemical Industry, and the American Institute of Mining and Metallurgical Engineers.

Nicolson, Arthur. See Carnock, Lord.

Noakowski, Stanislaw. Polish painter and architect, died at Warsaw, October 2. Born in 1867, he taught for a long period in the University of Moscow, and he was at one time professor of art and architecture in the St. Petersburg Academy of Arts, being also a member of the St. Petersburg Academy. His paintings, which were based on the motives of Polish architecture, were highly valued by artists throughout Europe. He returned to Warsaw after the World War, and became professor at the Polytechnic, having written numerous books on the science of architecture.

Noguchi, Hideyo.

Nordenskjöld, Nils Otto Gustav.

Noren, Heinrich Gottlieb.

Normand, Louis Philippe. Canadian physician and officeholder, died at Three Rivers, P. Q., June 27. He was born at Three Rivers, Sept. 21, 1863, and was graduated from Laval University, 1886; he received a certificate from the Chicago Polyclinic in 1896. He was widely known in Canadian and French medical circles, and in 1906 was president of the Third Congress of French-Speaking Physicians of North America; in 1907 he was president of the College of Physicians and Surgeons of Quebec, and was reelected in 1910. In 1922-23 he was president of the Canadian Medical Council. He was also a fellow of the American College of Surgeons. Dr. Normand was active in political life and served as mayor of his birthplace and home city, Three Rivers.

Oregon, Alvaro.

O'Brien, William.

Ocell, E. J. English actor, died at London, May 26, at the age of ninety-three. He was called "London's last Bohemian," and was for many years a picturesque figure at the Yorick and Savage clubs. His reminiscences of actors and actresses of former generations were numerous and varied. He made his first appearance in London in 1870 in Hervé's comic opera, *Chilperic*, and in the course of his long career played in the companies of Sir Henry Irving, Edward Terry, Sir Herbert Beerbohm Tree, George Rignold, Will Terriss, and others. About twenty years before his death he was admitted as a "poor brother" of the Charterhouse.

Ogden, Isaac Gouverneur. American railway official, died at Montreal, Canada, February 4. He was born at New York in 1844. Leaving school at sixteen, he entered the employ of a New York mercantile house. Later he was employed by Fisk & Hatch, bankers. In 1871 he became paymaster and accountant of the Chicago & Pacific R. R. Five years later he was promoted to auditor, and in 1881 began the connection with the Canadian Pacific Railway which lasted until his death. He was first the auditor of the western division, and in 1887 became comptroller of the system. In 1901 he was made a vice president in charge of finance. The department of which he had direct control started with six employees and had more than nine hundred when he died.

O'Grady, James M. E. American lawyer and politician, died at his birthplace, Rochester, N. Y., November 3. He was born Mar. 31, 1863, and was graduated from the University of Rochester in 1885. Being admitted to the bar in the same year, he became connected with the district attorney's office in Rochester. He was made school commissioner in 1887, and, becoming president of the board of education, he served until 1892. He was elected as a Republican to the State Assembly from the second Monroe district in that year. During his successive terms, he was appointed to the rules committee, and was made chairman of the committee on cities, and of the ways and means committee. He also acted as speaker, 1897-98. Mr. O'Grady was seated in the U. S. House of Representatives from the Thirty-eighth New York District in 1899, remaining in Congress for one term.

O'Grady, Standish Hayes.

Okura, Kihachiro, Baron. Japanese merchant, died at Tokyo, April 22, at the age of ninety-one. Born the son of a poor fish dealer, Okura rose to become one of the wealthiest and most influential men of Japan. He received his title in December, 1915, after he had ac-

quired a large fortune, for "meritorious services to business circles." His first business venture was in the importation of foreign weapons. Later he founded a foreign tailor's shop, said to be the first in Japan. In 1880 he was sent to America in the interests of Japanese tea. He established an engineering firm in 1884, and was contractor for the army in the Chino-Japanese and Russo-Japanese wars. He was interested in hotels, paper manufacture, theatres, steamship lines, electric lighting plants, silk companies, shoe factories, sugar refining, and brewing, besides his own company. In all he was owner or controller of sixty-three firms.

Oldfield, William Allan.

Oliver, James Harrison. American naval officer, rear admiral, U. S. Navy, retired, died at Shirley, Va., April 6. He was born in Houston County, Georgia, Jan. 15, 1857, and was graduated from Washington and Lee University in 1872 and from the U. S. Naval Academy in 1877. He advanced through successive grades until January, 1917, when he became a rear admiral. In 1914 he became director of the naval intelligence office, and he was later a member of the neutrality board. In March, 1917, he was appointed first Governor of the American Virgin Islands. He was retired in January, 1921.

O'Neill, Baron Edward. Irish jurist and politician, died at Eraserstown, County Derry, Ireland, November 19. Born Dec. 31, 1839, he attended Trinity College, Cambridge, becoming second Baron of Shane's Castle, Antrim, Ireland, on the death of his father in 1883. As a Conservative, he represented County Antrim in Parliament, 1863-80.

Opdyke, Howard. American educator, died at Schenectady, N. Y., June 14. He was born at New York, Nov. 5, 1872. He was graduated from Williams College in 1893 and almost immediately went to Union College, Schenectady, N. Y., as instructor in mathematics and physics. In 1899 he was made assistant professor of physics. From 1901 to 1903 he studied at the Polytechnic School and the University of Zurich, Switzerland, and in the latter year was appointed professor of physics at Union. In 1919 he was appointed to the chair of theoretical mechanics, which he held until his death.

Opel, Heinrich von. German automobile manufacturer, died at Mainz, Germany, May 26. He was the head of the motor-car manufacturing firm of the same name, with factories at Rüsselsheim, Hesse. The Opel experiments with automobiles propelled by the explosive power of rockets attracted international attention.

Oppenheim, Samuel. Austrian astronomer and educator, died at Vienna, August 15. Born in Moravia in 1857, he was graduated from the University of Vienna in 1880, and received the Ph.D. degree in 1884. After being at the university observatory at Vienna, he went to the Vienna-Ottakring observatory in 1889, and while working there also gave private instructions in astronomy. After teaching in Arnau and in Prague, he was appointed as professor at the University of Vienna in 1911, remaining there until his death. Dr. Oppenheim was particularly interested in gravitational astronomy.

Ossory, Bishop of. See, Brownrigg, Right Reverend Abraham.

Osthau, Edmund. American painter, died at Marianna, Fla., January 30. He was born at Hildesheim, Germany, Aug. 5, 1858, and studied at the Josephinum Gymnasium, Hildesheim, and at the Royal Academy of Arts, Düsseldorf, 1874-82. He went to America in 1883 and made his home at Toledo, Ohio, where he became principal of the Toledo Academy of Fine Arts in 1886. He left the academy in a few years, however, to devote all his time to painting, and won international recognition with his depiction of hunting and fishing scenes and dogs and horses.

Outcault, Richard Felton.

Outerbridge, Alexander Ewing, Jr. American metallurgist and educator, died at Philadelphia, Pa., January 15. He was born in Philadelphia July 31, 1850, and was educated at the Episcopal Academy, Philadelphia, and by a private tutor in analytical chemistry; later he attended lectures on physics and chemistry as assistant to Prof. Henry Morton. He was appointed assistant in the assay laboratory at the U. S. mint, Philadelphia, 1868. From 1880 until his death he was engaged in private practice as a metallurgist. He lectured on industrial economics at the Wharton School of Finance, University of Pennsylvania. In 1901 he was appointed professor of metallurgy at the Franklin Institute. He received the John Scott Legacy Medal and premium from the City of Philadelphia and the Elliott Oresson Gold Medal for discoveries in the molecular physics of iron.

Packard, James Ward.

Paetow, Louis John. American educator, died at Berkeley, Calif., December 22. Born at Milwaukee, Wis., Jan. 9, 1880, he was graduated from the University of Wisconsin in 1902, receiving the M.L. degree in

1903, and in addition to studying at the University of Paris in 1905, he was Harrison fellow in history at the University of Pennsylvania, 1904-06, and took the Ph.D. degree in the latter year. Having taught history in a high school at Grand Rapids, Wis., 1903-04, he was acting professor of history at the University of Colorado, 1904-05, history instructor at the University of Wisconsin, 1906-07, and associate in history at the University of Illinois, 1907-11. He then joined, as assistant professor of medieval history, the University of California, where he remained until his death, being appointed associate professor in 1917, and professor in 1919. Dr. Paetow, who was considered one of the most learned scholars of medieval history, belonged to a number of historical societies. He wrote; *Arts Course at Medieval Universities* (1910); *Guide to the Study of Medieval History* (1917), and translated or edited *Battle of Seven Arts*, by Henri d'Andeli (1914); *The Morale Scholarium of John of Garland* (1927), and *The Crusades*, and other historical essays presented to Dana C. Munro (1927).

Pain, Barry.

Pankhurst, Emmeline.

Parker, George Frederick. American editor and author, died at New York, in June. He was born at Lafayette, Ind., Dec. 30, 1847. He studied at the University of Iowa, 1868-70. Three years later he entered journalism, and edited newspapers in Iowa, New Hampshire, Pennsylvania, and at Washington, D. C., and New York. He was managing editor of the *New York Press*, 1887-88, and contributed to the *London Times* for ten years after 1895. He was assistant postmaster of Philadelphia, 1885-87, U. S. consul at Birmingham, Eng., 1893-98, and commissioner in the United Kingdom for the Louisiana Purchase Exposition, 1901-04. Mr. Parker was connected with the Democratic National Committee for many years and was well known for his devotion to the memory of Grover Cleveland; he wrote *Recollections of Grover Cleveland*, published in 1909. He was president of the Grover Cleveland Association. He received the honorary degree of LL.D. from Simpson College, 1908, and Washington and Lee University, 1909, and an A.M. from Iowa State University, 1909.

Passmore, Ellis Pusey. American banker, died at Philadelphia, Pa., January 22. He was born at Rising Sun, Md., Feb. 1, 1869, and was graduated from Swarthmore College, 1893. He received the honorary degree of M.A. from Swarthmore in 1918. Mr. Passmore began to work in a bank at fifteen and returned to banking after he had completed his college course. He served as cashier of the National Bank of Avondale, Pa., and of the Traders' National Bank of Scranton, Pa., and as vice president of the Franklin National Bank, Philadelphia, a governor of the Federal Reserve Bank of Philadelphia, and president of the Bank of North America, Philadelphia, before becoming president of the Bank of North America and Trust Company in 1923. He was a former president of the State Bankers' Association of Pennsylvania.

Patten, James A.

Patterson, Andrew Henry. American professor of physics, died September 9 at Little Bear's Head, N. H. He was born at Winston-Salem, N. C., Sept. 28, 1870, and, having been graduated from the University of North Carolina in 1891, he continued his studies at Harvard. He joined the faculty of the University of Georgia in 1894, as instructor of physics, and, becoming professor of physics and astronomy in 1898, he remained with the University until 1908, when he transferred to the University of North Carolina, as professor of physics. In 1911 he became dean of the School of Applied Science. He was given the D.Sc. degree by the University of Georgia in 1927.

Patterson, Mrs. Flora Wambaugh. American mycologist, died at Brooklyn, N. Y., February 5. She was born at Columbus, Ohio, Sept. 15, 1847. She studied at Antioch College, Antioch, Ohio, and the Wesleyan College of Cincinnati, Ohio, and for three years at Radcliffe College, Cambridge, Mass. She was later assistant at the Gray Herbarium, Harvard University, and in 1896 became assistant pathologist of the Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C. From 1898 to her retirement in 1923, she was mycologist of the department, in charge of pathological and mycological collections. She was a fellow of the American Association for the Advancement of Science and a member of the Phytopathological Society. In 1895 she was assistant editor of *Economic Fungi* and she contributed frequently to bulletins of the U. S. Department of Agriculture and to scientific journals.

Payro, Roberto J. Argentinian journalist, poet, and novelist, died at Buenos Ayres, April 6. He was educated at the National College, Buenos Ayres, where later he taught. His first book, a collection of verses, was published when he was seventeen, and a year later

he published his first novel. Two more books appeared before he was twenty-two, and then he became a journalist. In 1888 he established *La Tribuna* at Bahia Blanca, Argentina, and in 1891 became a member of the staff of *La Nacion* of Buenos Ayres, retaining the connection until he died. He published several novels and books of travel and wrote plays.

Paz, Luis. Bolivian jurist, died October 6, at the age of seventy-four. He was president of the Supreme Court of Bolivia and, besides his extensive law practice and legal studies, had written *Historia de Bolivia*.

Peacock, Alexander Rolland. American steel manufacturer and former partner of Andrew Carnegie, died at New York, July 12. He was born at Dunfermline, Scotland, the birthplace of Mr. Carnegie. He went to America early in life, and was a clerk in a linen store in Pittsburgh, Pa., when he attracted the attention of Mr. Carnegie. The latter gave his young countryman an opportunity in the steel business, and the latter was so successful that he became eventually a partner of the manufacturer. His activities were mainly in the selling end of the business. He was credited with selling 65,000 tons of rails to the Canadian Pacific R. R. and 65,000 tons of steel for the New York subway. In later years Mr. Peacock went to New York and then became engaged in the real estate business.

Pearson, Edward Jones.

Peelle, Stanton Judkins.

Pelham-Clinton, Henry Pelham Archibald Douglas. See Newcastle, Duke of.

Pena y Reyes, Antonio de la. Mexican historian and politician, died June 25, at the age of sixty. He was author of many books and articles on Mexican history and internal and international problems, and was also active in politics. He was at one time a member of the Mexican Legislature and a member of government commissions to Cuba and Italy.

Perez, The Rev. Joaquin. Mexican ecclesiastic, died June 21. He was patriarch of the Mexican National Church, which was established in 1926 with the avowed purpose of obeying the laws of Mexico respecting the practice of religion in the Republic, and of disregarding the authority of the Roman Catholic Church.

Perron, Karl. A celebrated German dramatic baritone, died in Dresden, in August. He was born at Frankenthal, in 1858, studied under Stockhausen in Frankfurt and made his debut as a concert singer in 1880. The success of his operatic debut, in 1884, as Wolfram in *Tannhäuser*, in Leipzig, led to an immediate engagement there. From 1891-1913 he was one of the brightest stars of the Dresden Hofoper. In 1889 and 1896 he sang at Bayreuth.

Perry, John Hoyt. American lawyer, died at Averill, Vt., September 2. He was born at Southport, Conn., July 26, 1848, and was graduated from Yale, 1870, and from the Columbia Law School two years later, returning to Yale for a year of post-graduate work. He practiced at Norwalk, Conn., 1872-86, serving as a member of the Connecticut House of Representatives, 1877-78 and 1881, and as the speaker of the House, 1889. Moving to Bridgeport, Conn., in 1887, he practiced for two years, when he was appointed Judge of the Court of Common Pleas, an office which he held until he returned to private practice in 1893, retiring in 1902. He became vice president of the Connecticut Constitutional Convention in the same year, and he was elected to the State Senate, 1913-15.

Petrunkевич, Ivan Ilitch.

Phillips, Harriet Sophia. American painter, died at New York, July 30. She was born at Delta, N. Y., in 1849. She attended the seminary at Fort Edward, N. Y., and the normal academy at Fredonia, N. Y., before studying art at New York, Munich, and Paris. Her paintings were exhibited at New York and other American cities and at Munich and Paris, and she gave many of them to the University of Akron, Ohio, where they are displayed in a special room.

Pierce, Carlton Brownell. American lawyer, died at New York, August 8. He was born at Trenton, N. J., June 22, 1857, and having been graduated from Rutgers College, he attended the Albany Law School, and later practiced for five years in Cooperstown, N. Y., before moving to New York. Mr. Pierce was elected to the New Jersey State Assembly in 1918, having a residence in Cranford, and he later served a six-year term in the State Senate. He was also at one time judge in the Court of Common Pleas, at Elizabeth, N. J.

Pine, Max. American labor leader, died at Maywood, N. J., March 2, at the age of sixty-two. He was born in Russia, and went to America when young. He engaged at first in tailoring, but left it soon to devote himself to the cause of labor unionism, as secretary of the United Hebrew Trades at New York. He was also active in politics as a Socialist and was one of the founders of the Jewish daily, *Forwärd*, of New York. He was prominent in Jewish relief work during and

after the World War, and went to Russia as a member of the Joint Distribution Committee for Jewish War Sufferers.

Pinkham, The Rt. Rev. William Cyprian.

Piper, Edgar Bramwell. American editor, died at Portland, Ore., May 3. He was born at Warsaw, Ind., Feb. 25, 1865, and at the age of eleven was taken by his family to Oregon. He began to work as a printer when he was 13, but found time later to study at Willamette University, Salem, Ore., from which he was graduated in 1886. He was employed by newspapers at Portland, Ore., San Francisco, Calif., and Seattle, Wash., and from 1904 to 1909 was managing editor of the *Morning Oregonian*, Portland, Ore. In 1910 he became editor of the paper, and he held that position until his death. He was vice president of the American Society of Newspaper Editors, a director of the North Bureau of the Newspaper Alliance, and a member of the national committee for the celebration of the second centenary of the birth of George Washington. Willamette University conferred the degree of LL.D. on him in 1909.

Pitaval, The Rt. Rev. John Baptiste.

Place, Ira Adelbert.

Platt, Charles. American physician, chemist, penologist, and author, died at Ardmore, Pa., June 14. He was for two years chief chemist in the private laboratories of Thomas A. Edison at Llewellyn Park, N. J. Dr. Platt was born at Montclair, N. J., Mar. 16, 1869, and was graduated from Lehigh University with the degree of B.S. in 1890. He then studied at Johns Hopkins University, the University of Edinburgh, L'École de Médecine, Paris, the Homeopathic Hospital, London, and the Hahnemann Medical College, Philadelphia. He was with Mr. Edison from 1890 to 1891, and from 1894 to 1909 was professor of chemistry and toxicology at the Hahnemann Medical College, becoming emeritus professor of chemistry in 1909. From 1900 to 1919 he practiced medicine in Philadelphia. He retired from practice to devote himself to writing on scientific subjects. He was deeply interested in penology and was president of the National Probation Association, 1925-26; director of the Pennsylvania Committee on Penal Affairs and chairman of the Citizens' Committee of the Municipal Court of Philadelphia. He was a fellow of the Chemical Society of London and an honorary member of the Society of Biological Chemistry of London. He wrote: *Qualitative Analysis and Medical Chemistry*; *Practical Medical Chemistry*; *The Psychology of Thought and Feeling*, and *The Psychology of Social Life*.

Plummer, William Edward. English astronomer, died May 22. Born at Deptford, Mar. 26, 1849, he studied privately and entered the Royal Observatory at Greenwich. He later assisted Dr. J. R. Hind at Mr. Bishop's Observatory at Twickenham, before becoming senior assistant at the Oxford University Observatory. He was subsequently made director of the Liverpool Observatory, and astronomer to the Mersey Docks and Harbor Board, positions which he held until his death. Mr. Plummer also served as honorary reader in astronomy at the University of Liverpool from 1900 until his death and in 1895 was appointed astronomy examiner at the University of Edinburgh. He was a fellow of the Royal Astronomical Society and at one time was president of the Liverpool Astronomical Society. His writings include the following publications: *On the Motion of the Solar System*; *Researches in Cometary Astronomy*; *Annual Reports from the Liverpool Observatory*; *Examination of Anemometer Records* (1896); and *Great Cluster in Hercules* (1905).

Pohlig, Karl.

Polachek, Solomon. American Talmudic scholar and educator, died at New York, July 8. He was born at Meitshet, Russia, in 1877, and emigrated to America in 1921. He was professor of the Talmud at the Rabbi Isaac Elchanan Theological Seminary, New York, and was known all over the world as an authority on Jewish law.

Poland, Sir Harry (Bodkin). English barrister, who was for nearly eighty years a member of the bar, died at London, March 2. He was born at London, July 9, 1829. He was educated at St. Paul's School and became a barrister in 1851 and a bencher of the Inner Temple in 1879. He appeared in practically every famous criminal trial in England prior to his retirement in 1895 (when he was knighted), and as one of the counsel to the Home Office and Treasury represented the Government in famous cases, notably that of the Fenians charged with attempting to blow up Clerkenwell Prison. He was active for many years in law reform, and it was largely through his efforts that the act was passed by which prisoners were allowed to give evidence in their own behalf. He was recorder of Dover, 1874-1901, honorary freeman of the same place, and alderman of the London County Council.

Pope, Thomas E. American chemist and educator,

died at Whitinsville, Mass., October 30, at the age of eighty. He was born at New Bedford, Mass., and was graduated from Harvard. After teaching at Ames Agricultural College, Ames, Iowa, he was appointed professor of chemistry at the Massachusetts Institute of Technology, where he remained for thirty years.

Porter, Major General Sir Robert. British military surgeon, died at Beckenham, England, February 27. He was born in the County of Donegal, Ireland, Jan. 31, 1858, and was educated at Foyle College, Londonderry, Ireland; Glasgow University, and Paris. He entered the British military service in 1881 and saw service in several campaigns, including those in Ashanti, 1895-96, and the South African War, 1899-1902. He won decorations in both wars. In the World War, he was from 1915 to 1917 director of the medical service of the Second Army, and won promotion to the rank of major general. He received the Croix de Guerre of Belgium and the distinction of a Commander of the Order of the Crown of the same country. He was made a Companion of the Bath in 1916, a Companion of St. Michael and St. George in 1919 and a Knight Commander of the Bath in 1921.

Post, Louis Freeland.

Pothier, Aram J.

Potter, Brig. Gen. Charles Lewis.

Potts, Ramsay Douglas. American army officer, died at his birthplace, Washington, D. C., October 17. He was born Sept. 1, 1850, and having been commissioned second lieutenant in the Third Artillery, Mar. 7, 1867, he was graduated from the Artillery School three years later. He rose through successive grades and served in Cuba during the Spanish-American War, 1898, and in the Philippine Islands, 1901-03. He commanded the United States Artillery School, at Fort Monroe, Va., 1904-06, acting at the same time on the National Board of Ordnance and Fortifications, and as president of the Artillery Board, of the Artillery School Board for the revision and drill regulations of the coast artillery. He was then made a member of the General Staff of the United States Army, and was commissioned brigadier general, Jan. 31, 1908. He commanded the Department of the Gulf, 1908-09, Fort William McKinley, and Department Luzon, P. I., 1909-10. The following year, he was appointed commandant of the Army Service Schools, at Fort Leavenworth, Kan., on January 16, and commander of the Central Division, on July 1. He retired April 30, 1914.

Pourtales (J. L.) Frederick (W. J.), Count. Former German diplomat and ambassador to Russia at the outbreak of the World War, died at Bad Nauheim, Germany, May 3. He was born at Oberhofen, Switzerland, Oct. 24, 1853. He was Prussian Minister to Bavaria in 1907 when he was advanced to the rank of ambassador and sent to St. Petersburg as imperial representative there. As such it was his duty to present to the Russian Government the German declaration of war in 1914. After the War he lived in retirement on his estate at Glumbowitz, Silesia.

Powell, Clinton Latham. American educator, died at Baltimore, Md., May 25. He was born at York, Pa., Oct. 29, 1880, was graduated from Amherst College, and continued his studies at Columbia University. He was professor of English at Amherst.

Preston, Homer M. American financier and developer of oil fields, died at Kiantone, N. Y., April 2. He was born at Farmington, Pa., Dec. 1, 1860. He was educated at public schools, and early in life entered the oil business in Pennsylvania. He operated successfully in that territory for many years, and then turned his attention to Oklahoma. There he was associated with the Royal Dutch interests. He retired from active interest in the oil business about 1918 and passed the rest of his life on large farms which he had purchased in Chautauque County, New York, and Warren County, Pennsylvania. He was identified with the development of the carbon-black industry in West Virginia and Louisiana, and had extensive financial interests in banks and public utilities. Mr. Preston was active as a Democrat and served as a member of the Democratic State Committee of New York and as an alternate to the Democratic National Convention of 1924.

Pringle, William Mather Rutherford. English politician, died at London, April 1, at the age of fifty-three. He was born in Berwickshire, Scotland, and was educated at Glasgow University. He read law at the Middle Temple. From 1910 to 1913 Mr. Pringle sat in Parliament as a Liberal, representing Northwest Lancashire, and from 1922 to 1924 he represented the Penistone division of Yorkshire. He was a prominent member of his party, although he never held office, and with the late Earl of Oxford and Asquith led the opposition in the party to Lloyd George. In 1927 a group of Liberals, led by Mr. Pringle and Viscount Grey of Falloden, announced the formation of the Liberal Council, which would not recognize Lloyd George's leadership yet would remain within the Na-

tional Liberal Federation. Mr. Pringle was a recognized authority on the political history of England and on parliamentarianism.

Protogeroff, General Alexander.

Pudukota, Rajah of (His Highness Rajah Martand Bhairava Tondiman Bahadur). Indian ruler, died at Neuilly, France, May 28. He was born Nov. 26, 1875, and succeeded his father in 1886. He was invested with full power in 1894, on the completion of his nineteenth year. Pudukota, one of the native states of the East Madras Presidency of India, with an area of 1179 square miles and a population of 426,813, has been ruled by the Tondiman dynasty from time immemorial. The late Rajah granted his people a representative assembly for consultative and legislative purposes, and a state council of three to act in an advisory capacity. King George V conferred on him in 1913 the Grand Cross of the Order of the Indian Empire. During the World War he was an ardent supporter of the British cause. He passed most of his time at Cannes, France, his affairs in India being administered by a brother.

Puente y Patron, Ricardo González de la. Spanish naval officer, died at Madrid, October 23. Born in 1855, he entered the navy, and was commissioned Captain General in April, 1922. Being on the general staff, he became its vice president and chief admiral.

Puiseux, Pierre Henri.

Purman, William J. American lawyer and legislator, member of the Forty-third United States Congress, died at Washington, D. C., August 13. He was born in Center County, Pa., Apr. 11, 1840, and after studying law, he served with the Union Army during the Civil War. Assigned to duty in Florida in 1865, three years later he was elected to the Florida Constitutional Convention. From 1868-69 he was judge of the Jackson County Court, being elected to the State senate, where he served from 1869-73. He became assessor of internal revenue of the United States for the district of Florida in 1870-72, and the following year he took his seat in the United States House of Representatives, as Republican Representative-at-large from Florida, being reelected to the succeeding Congress, but defeated in 1876.

Putney, Albert Hutchinson.

Quesada, Presentacion.

Raditch, Stefan.

Rai, Lala Lalpat.

Rathbone, Henry Riggs.

Raymond, E. T. See Thompson, Edward Raymond.

Raymond, Robert Mathew.

Reamer, Lawrence. American dramatic critic, died at New York, February 18. He was born at Louisville, Ky. He was graduated from Columbia University and from the law school of the university, and studied abroad. In 1893 he became a member of the staff of the New York Sun, and after many years' service as a reporter he became dramatic critic, and wrote as such until 1920. Then he became a writer of editorials, especially those that dealt with the drama, music, literature, and other arts. He was considered especially well informed concerning operatic works and their presentation.

Reed, Charles Alfred Lee.

Reed, Frank Otis. American educator, died at Tucson, Ariz., December 8. Born at Orange, Mass., July 20, 1876, he was graduated from Amherst in 1899, and after attending the universities of Paris, Madrid, and Halle, received from Harvard the M.A. degree in 1904, and the Ph.D. degree in 1905. Professor Reed commenced teaching at Amherst in the year of his graduation and subsequently was appointed professor of Romance languages at the University of Wisconsin. At the time of his death, he was professor of Spanish at the University of Arizona.

Reid, William. South African astronomer, died at Cape Town, S. A., June 8. In January, 1927, the Harvard Observatory at Cambridge, Mass., received a cablegram from the astronomical clearing house at Copenhagen, Denmark, announcing the discovery of a supposedly new comet of the eighth magnitude, to be called Reid's comet. It was assumed that the discoverer was Mr. Reid, of the Good Hope Observatory, who already had discovered seven other comets.

Reinach, Theodore.

Reinhardsen, Col. Gustave S. American Salvation Army official, died at Mount Vernon, N. Y., July 3. He was born in Norway in 1866, and was a sailor in his early years. In 1883 he joined the Salvation Army, and he rose in its ranks until he became a colonel, and national auditor and chief financial secretary of the American branch of the Army.

Remey, Rear Admiral George Collier.

Restrepo, Bernardo Herrera. Roman Catholic prelate of Colombia, South America, archbishop of Bogotá and primate of Colombia, died at Bogotá, January 2. He was eighty-three years old. Educated in France and Italy, Archbishop Restrepo early went to Colombia and

spent forty years as head of the archdiocese of Bogotá.

Rhoads, John Neely. American ophthalmologist, died at Philadelphia, Pa., January 29. He was born in Montgomery County, Pennsylvania, in 1860, and was educated at the Trenton, N. J., Normal School and the Jefferson Medical College, Philadelphia. He became a lecturer at the college soon after his graduation, and established the children's clinic there. He served at the Jefferson and St. Agnes Hospitals until 1899, when he became ophthalmologist at the Polyclinic Hospital. Dr. Rhoads was credited with the invention of more than 35 medical instruments and appliances, and was the author of numerous professional articles.

Riccio, Vincenzo. Italian politician, died in Italy, August 21, at the age of seventy. Having been under-Secretary of the interior in Sonnino's cabinet before the World War, he was appointed to the Ministry of Posts by the first war Prime Minister, Salandra, and he was made Secretary of Agriculture during Orlando's premiership in 1917. He was appointed Minister of Public Works in 1922, and at the time of his death he was a member of the Chamber of Deputies.

Rice, William Clarke. American painter and illustrator, died at New York, February 14. He was born at Brooklyn, N. Y., Apr. 19, 1875, and was graduated from the College of the City of New York. He studied art at the school of the Art Students' League. He was engaged principally in the production of illustrations for magazines and the painting of portraits and mural decorations. His mural paintings were placed in public schools, hotels, and other public buildings, of New York. He also taught drawing and design. Mr. Rice was a member of the Architectural League of New York and of the National Society of Mural Painters.

Richards, Herbert Maule.

Richards, Theodore William,

Richmond, Harry Alden.

Richmond, Mary Ellen. American social worker, died at New York, September 12. She was born at Belleville, Ill., Aug. 5, 1861, and was graduated from the Baltimore High School, and became general secretary of the Baltimore Charity Organization Society in 1891, and of the Philadelphia Charity Organization Society in 1900. She was appointed director of the Charity Organization Department of the Russell Sage Foundation in 1909, and served in that position until her death, devoting herself particularly to the problem of child marriages. She received the M.A. degree from Smith College in 1921. Besides editing several publications on social work, Miss Richmond wrote: *Friendly Visiting Among the Poor* (1899); *The Good Neighbor in the Modern City* (1907); *Social Diagnosis* (1917); *What is Social Case Work?* (1922); and she collaborated in *Child Marriage* (1925).

Richmond, and Gordon, Seventh Duke of.

Ricker, Edward P. American hotel proprietor, died at his birthplace, Poland Springs, Me., December 22, at the age of eighty-one years. He developed the Mansion House from a small country inn to one of the most important of the Ricker chain of hotels. He was active in the Republican party.

Ries, Elias Elkan.

Rivera, José Eustasio. Colombian politician and author, died at New York, December 1, at the age of forty. Born at Neiva, Colombia, he became a member of the Chamber of Deputies, being at one time its president. He was also president of various committees to investigate legislative matters. He was appointed secretary to several embassies, and represented his country at the centenary independence celebrations of Peru and Mexico. At the time of his death, Dr. Rivera was in the United States arranging for the translation of his novel, *La Voragine*, a fifth edition of which was being published.

Rixey, Rear Admiral Prestley Marion.

Roberts, Theodore. American actor, died at Los Angeles, Calif., December 14. Born at San Francisco, Calif., Oct. 8, 1861, he attended the California Military Academy, Oakland. He first appeared on the stage as Barabas in *Richelieu*, May 1, 1880. He was on tour with William H. Crane and Stuart Robson, 1881-82. After many American engagements he made his debut in London as Henry Canby in *Arizona*, Feb. 3, 1902. Although he at first scorned the moving pictures, Mr. Roberts was in the production of *The Call of the North*, 1914. Subsequently signing a life-long contract with Paramount Pictures, he became one of the popular "old man" characters of the screen. Among his best portrayals, though out of his usual homely rôle, was that of Moses in *The Ten Commandments*.

Robertson, Felix Huston. American soldier, brigadier general in the Confederate States Army, died at Waco, Tex., April 20. He was born at Washington, Tex., Mar. 9, 1839, and studied at the U. S. Military Academy, 1857-61, resigning in January, 1861. In March of the same year he was commissioned as second lieutenant of artillery in the Confederate States

Army. He rose successively to captain and lieutenant colonel of artillery before becoming brigadier general of cavalry in the corps of General Joseph Wheeler. It was said that Robertson was the youngest man to be commissioned as general in either the Union or the Confederate Army in the Civil War, and he was said to be also, before his death, the last surviving member of the general staff of the Confederate States Army. After the Civil War he studied law and he was admitted to the bar of Texas in 1876, but in 1903 he became a farmer, at Crawford, Tex. In 1927 the United Confederate Veterans, in convention, bestowed upon him the title of honorary commander-in-chief.

Rose, Frank Herbert. English journalist, playwright, labor leader, and member of Parliament, died at London, July 10. He was born at London, July 5, 1857, and was educated at the British School, Lambeth, London, and in evening classes. He worked as an engineer until 1893 and as a trade-union organizer until 1900. From that year until his death he was engaged in journalism and the writing of plays and in his duties as a Labor member of the House of Commons for Aberdeen North (since 1918). He was one of the most active opponents of Communism in the Labor Party and was also a strong critic of the proposed nationalization of industry in Great Britain. He wrote *The Coming Force*, and *Our Industrial Jungle*, besides numerous pamphlets and articles on economic subjects; also stories, sketches, etc., and the plays, *The Whispering Well*, *Trouble in the House*, *The Second Mrs. Banks*, *The Young Guv'nor*, and others.

Round, John Horace. English historian, died at Brighton, England, June 24. Born at Brighton, Feb. 22, 1854, he was educated at Balliol College, Oxford, where he took his master's degree with first-class honors in modern history. He insisted upon the necessity of critical examination of original records in the writing of history, and his vehemence in controversy entailed the making of many enemies. However, his erudition and painstaking scholarship were generally recognized, and he early established a reputation as a constructive historian. He was especially noted for his studies in the histories of the notable families of England, and from 1914 to 1921 he held the office of honorary historical adviser to the Crown in peerage cases. The influence of his work on the development of historical scholarship in England, especially in relation to feudal and mediæval times, was profound. The University of Edinburgh conferred on him an Hon. LL.D. He contributed to historical reviews, to the *Dictionary of National Biography*, etc., and published *Geoffrey de Mandeville* (1892); *Feudal England* (1895); *The Commune of London* (with a great deal of material dealing with London at the end of the twelfth century, discovered by Round himself, and quite as valuable for London as the two preceding titles are for England in general in the same period 1899); *Calendar of Documents Preserved in France* (1899); *Studies in Peerage and Family History* (1901); *Peerages and Pedigrees* (1910); *The King's Serjeants* (1911).

Rowan, William Andrew. American, high official of the order of Free and Accepted Masons, died at Pelham, N. Y., January 2. He was born at Vienna, Mo., in 1875. He was a building contractor by trade. Mr. Rowan was elected master of Ancient Lodge, New York City, in 1910, and in 1911 he was appointed district deputy grand master of the Eighth Masonic District of New York State. In 1922 he was elected deputy grand master of the State and was reelected in 1923. In May, 1924, he was chosen grand master of the State and was reelected in the following year. He was made an honorary thirty-third degree Mason in 1924.

Royall, William Bailey. American educator, died at Wake Forest, N. C., January 27. He was born at Mount Pleasant, S. C., Sept. 2, 1844. He studied at Furman University, was graduated in 1859, and was at Wake Forest College when the Civil War began. He served in the Confederate Army throughout the war. He received his M.A. from Wake Forest in 1866, and began to teach Greek in that institution in the same year. He was professor of Greek at Wake Forest from 1871 until he died; among his pupils were numbered twelve men who became heads of Southern colleges, and two who became presidents of theological seminaries. Dr. Royall was ordained to the Baptist ministry in 1869. He received the degree of D.D. from Judson College in 1887 and that of LL.D. from Furman University in 1907.

Rozwadowski, Thaddeus. Polish soldier and general, died at Warsaw, October 18, at the age of sixty-six. General Rozwadowski was Chief of the Polish General Staff when the Russian Bolsheviks were defeated in 1920. He was later imprisoned because a company which he organized to aid mobilized soldiers became bankrupt.

Rule, William.

Rushdi, Fasha Hussein.

Ryan, Thomas Fortune.

Ryerson, Edward Larned. American iron and steel merchant, died at Chicago, Ill., January 19. He was born at Chicago, Nov. 24, 1854, and was graduated from Yale in 1876. In the same year he entered the wholesale iron and steel business that had been established by his father in 1842, and from 1881 to 1911 he served as president, leaving that office to become chairman of the board of directors. He was also a director of the Merchants' Trust Company of Chicago. Mr. Ryerson was active in the advancement of the musical, art, and literary interests of Chicago, and was president of the Newberry Library from 1914 and governing member of the Chicago Symphony Orchestra and of the Art Institute of Chicago.

Sackville, Third Baron (Lionel Edward Sackville-West). British peer and soldier, died at Knole, Sevenoaks, Kent, England, January 28. He was born May 15, 1867, and was educated at Wellington and at Christ Church, Oxford, where he took his degree with honors in modern history. He was formerly lieutenant-colonel of the West Kent Yeomanry, and he served in the World War in Gallipoli, Egypt, Palestine, and France. Lord Sackville in 1908 succeeded his uncle, the second Lord Sackville, who was a well-known diplomat, when minister to Washington, in 1883, the second Lord Sackville incurred the displeasure of the American Government by alleged interference in American politics, and was recalled. The third Lord Sackville was called upon in 1910 to defend his title and estates against a claimant who called himself a son of the diplomat, but who was defeated.

Sage, Agnes Carolyn. American author, died at Hackensack, N. J., November 12. She was born in Brooklyn, N. Y., Mar. 17, 1854, and attended the Dearborn Seminary in Chicago. Having lived at Oswego during her childhood, she moved to Chicago in 1870, and in 1875 returned to Brooklyn. She went to New Jersey in 1900, where she remained until her death. Later known as the author of children's stories, she started her literary career with an article published in 1873, and thereafter contributed to numerous magazines. In 1887, she wrote her first juvenile book, *Christmas Elves*, which she followed by several others, including: *The Jolly Ten* (1888); *A Little Colonial Dame* (1898); *A Little Daughter of the Revolution* (1899); *The Boys and Girls of the White House* (1909); and *Two Girls of Old New Jersey* (1912).

Said Pasha, Mohammed.

Sanford, Harry Charles. American civil engineer, died at Englewood, N. J., April 22. He was born at Mantua, Ohio, in 1869, and was graduated from Valparaiso University, Valparaiso, Ind., as a civil engineer. He was chiefly engaged during his professional career in tunnel, subway, and bridge work, among his earlier experiences being a connection with John B. McDonald, the contractor who built the first subway for New York City. He was co-inventor of the Coughlin-Sanford swing-rail frog. In 1925 Mr. Sanford became vice president of the Rosoff Subway Construction Company, working on the new Eighth Avenue subway, New York City. He was connected for nearly thirty years with the Degnon Construction Company, of which he was a director, and he was a director of the Degnon Terminal Railway Company and vice president, treasurer, and director of the Universal Speed Control Company.

Sapah-Gulian, S. Armenian patriot and editor, died at Greystone Park, N. J., April 29. He was born at Sunyatz Ashkar, Armenia, Feb. 17, 1861. He was principal of a school in Armenia and was prominent in the agitation for the amelioration of Armenian conditions under Turkish rule, until he was compelled to seek refuge at Paris. There he studied at the Sorbonne, and became editor of the Armenian nationalist newspaper, *Hunchak*, organ of the Hunchakian party. When the Young Turks assumed control at Constantinople, Mr. Sapah-Gulian founded there an Armenian newspaper, *Norashkar*, but at the outbreak of the World War he was compelled to fly again; twenty of his associates were executed. He escaped first to Egypt and then to America; he had visited the United States in 1903 and had founded in Boston an Armenian newspaper, *Eridassard Hayastan* ("Young Armenia"). This he removed in 1918 to New York, where he edited it until his death.

Sarwat Pasha, Abdel Khalek.

Scheer, Admiral Karl Friedrich Rienhard von.

Scheler, Max Ferdinand.

Schlaikjer, Erich Friedrich. German author and actor, died February 11. He was born at Apenrade, Nov. 20, 1867, and after following the usual course of study, he attended a theatrical school. Entering the Seminar Hadersleben in 1888, he served as an instructor until 1892, and acted until 1894. He then left the stage, and devoted himself to writing. His books include: *Die Schönheitswandler* (sketches 1897); *Hinrich Losen* (drama, 1900); *Berliner Kämpfe* (essays, 1901); *Des Pastors Riecke* (comedy, 2d and

3d ed. 1902); *Der lahme Hans* (drama, 1914); *Mein Freund Niels und andere* (sketches, 1905); *Ausserhalb der Gesellschaft* (drama, 1908); *In Schlimmen Händen* (novel, 1914); *Doktor Franzens Abenteuer* (farce, 1915); *Die Welt der Gestorbenen* (1920); *Im Kampf mit der Schande* (political essays, 1920); and *Die Vision der schwedischen Margret* (1922).

Schlapp, Max Gustav.

Schmitt, Christian.

Schmitt, Ettore. See Svevo, Italo.

Schmitz, Eugene F.

Schneider, Albert.

Schneider, Jacques.

Schoenberger, George Christian. American civil engineer died at New Orleans, La., September 24. He was born at Buras, La., Jan. 17, 1875, and was graduated from Louisiana State University in 1898. He then worked with Federal engineers on levee construction, for the Mississippi River Commission, and in 1917 he was made a member of the board of State engineers in charge of levee construction, becoming chief State engineer in 1925. Mr. Schoenberger's engineering experience had been gained in work on the Mississippi River, and during the flood of April, 1927, he controlled the dynamiting of the Poydras levee, which saved New Orleans.

Schroeder, Alvin.

Schwabach, Felix. German financier, died at Berlin, January 7. He was born at Sondershausen, Germany, June 20, 1853, and was educated at the universities of Leipzig, Heidelberg, and Berlin, where he studied law and political economy from 1873 to 1876. From 1876 to 1903 he was in the service of the Government railways, and in 1904 he visited the United States on a Government mission connected with the study of labor problems. During the World War he formed part of the German Government staff at Brussels. He was a member of the Reichstag in 1907. Herr Schwabach was connected with financial houses in Germany and was reputed to be one of the best international economists in Europe. With Privy Councillor Hoff, he wrote a book on the control and operation of American railroads.

Schwanhauser, William. American engineer and inventor, died at New York, January 15, at the age of seventy-two. He was born at Würzburg, Germany. He was graduated from the Polytechnic Institute of Mittweida, Saxony, in 1874. After service with Osterheld & Bickmeyer, Yonkers, N. Y., in the development of pumps, typewriters, motors, reapers, and mowers, and with the Otis Elevator Works, Yonkers, as assistant general superintendent, he became connected with the Worthington Hydraulic Works in 1885. He supervised the manufacture of pumps, and in 1895 was placed in charge of the Worthington plant in Germany. In 1906 he became chief and consulting engineer of the International Steam pump Company, later the Worthington Pump and Machinery Corporation. He took a prominent part in the introduction of compound- and triple-expansion engines and of a device for returning to the boilers steam that had been wasted previously.

Sedley, W. H. See Brown, Sedley.

Seep, Joseph. American pioneer in the oil industry, died at Titusville, Pa., April 1. He was born at Voerden, Germany, May 7, 1838, and was taken to the United States in 1849. In early life he was a cigar-maker, but later engaged in cotton buying at Lexington, Ky. In August, 1859, the first oil well in the United States was sunk at Titusville, and Mr. Seep, foreseeing the possibilities of the industry, early removed to that town. From that time until a few weeks before his death he was actively engaged in the oil business, and was one of the best-known men in it. He was the oldest survivor of the former business associates of John D. Rockefeller, Sr. While still a young man, Mr. Seep was commissioned by leading refineries to purchase crude oil in the Pennsylvania fields, and at one time he maintained 37 offices in various parts of the United States. When the Standard Oil Company was formed, in 1871, he became associated with it. One of its subsidiary companies was the South Penn Oil Company, with which Mr. Seep was intimately identified, and when the original Standard Company was dissolved, in 1911, he was made president of the South Penn Company. Later he became chairman of the board of directors of the company, and he held that post until his death. He was the oldest director of the Seaboard National Bank of New York, which he helped to organize, and had many other large business interests, especially in the Mine and Smelter Supply Company, of Denver, Colo. He was noted for his gifts to Roman Catholic charities, and he was made by the Pope a Knight of the Order of St. Gregory.

Seested, August Frederick. American journalist, died at Kansas City, Mo., October 2. He was born at Tondern, Denmark, Mar. 26, 1864, and, moving to the

United States in 1880, settled in Kansas City, Mo., where he found work with the *Star*. Remaining with that paper, he became general manager in 1902, and in September, 1927, he was made president of the company.

Seeley, Levi. American educator, died at Amherst, Mass., December 23. Born at North Harpersfield, N. Y., Nov. 21, 1847, he was graduated from the Albany Normal School in 1871, and received the Ph.D. degree from the University of Leipzig in 1886. Before going to Germany, in 1883, he was principal of New York public schools at Orient, 1871-74, New Hamburg, 1874-75, Patchogue, 1875-81, and from 1881 until 1883 he was superintendent of schools at Lansingburg, N. Y. On his return to the United States, he again served as school principal, at Cobleskill, 1886-87, and at Ferry Hall Seminary, Lake Forest, 1887-94. After traveling in Europe for a year, he was appointed, in 1895, professor of pedagogy at the Trenton Normal School, where he remained until his retirement in 1920. Williams conferred on Dr. Seeley the honorary A.M. degree in 1871. He wrote: *The Grube System of Numbers* (1887); *The Grube Idea* (1890); *The German Common School System and Its Lessons to America* (1896); *History of Education* (1899); *The Foundations of Education* (1901); *A New School Management* (1903); *Seeley's Question Book* (1905); *Elementary Pedagogy* (1906); and *Teaching, Its Aims and Methods* (1915).

Semon, Larry. American motion-picture comedian, died near Victorville, Calif., October 8. Born while his parents were traveling with a theatrical troupe in Mississippi, in 1890, he grew up with the vaudeville company, and, inheriting his father's gift for drawing, he was sent to an art school. After working at odd jobs, he became a cartoonist on the *New York Sun*, and while there, established a connection with the Vitagraph Company. He worked for two years in that company's studios before making a sudden and complete success as the slapstick hero of a short comedy film. His name was soon announced with numerous motion pictures, among the most popular of which were, *Stop, Look, and Listen*, and *The Wizard of Oz*.

Shaffer, Newton Melman.

Shakespeare, John Howard.

Shaw-Lefevre, George John. See Eversley, First Baron of old Ford.

Sheldon, Charles. American explorer and author, died in Nova Scotia, September 20. He was born at Rutland, Vt., Oct. 17, 1867, and was graduated from Yale University in 1890. Three years later he became assistant superintendent of the Toledo division of the Lake Shore & Michigan Southern Railway, and he was general manager of the Consolidated Car Heating Company, in Albany, N. Y., 1894-98, and of the Chihuahua & Pacific Railway, in Mexico, 1898-1902. Mr. Sheldon devoted himself to exploring and hunting expeditions in the Yukon Territory, in Alaska, and in Mexico, writing several books of his adventures, including: *The Wilderness of the Upper Yukon* (1911) and *The Wilderness of the North Pacific Coast Islands* (1912).

Sheldon, Charles Mills. American artist and correspondent resident in England, died at London, March 15. He was born at Lawrenceburg, Ind., June 24, 1866. After receiving a public school education, he studied art at the Académie Julian, Paris, under Constant and Lefebvre. His work consisted mainly of illustrations of military campaigns and other outstanding events in many parts of the world, and he also wrote articles describing the events. He traveled in the Southern United States in 1889 for the Associated Press; from 1892 to 1895 he was illustrator for the *Pall Mall Budget*, and in 1896 he became an artist and correspondent for *Black and White*. He described the Spanish-American War for that magazine and for *Leslie's Weekly*. He was with Kitchener at Khartoum, and he was present at the coronation of King Edward VII, the marriage of King Alfonso XIII of Spain, the South African War, the opening of the Assuan Barge, and the Durbar at Delhi. In the World War he went to the British front as a special artist for the Northcliffe press.

Shumway, Edgar Solomon. American educator and classicist, died at Brooklyn, April 18. He was born at Belchertown, Mass., June 16, 1856. He was a graduate of Amherst College, 1879, and studied Roman law and similar subjects at the Universities of Berlin and Marburg and at the archaeological institutes at Rome and Athens. His first teaching position was at Cheltenham Military Academy, 1880-82; then he became, in succession, professor of Latin and Greek at the State Normal School, Potsdam, N. Y., 1882-83; adjunct professor and professor of Latin language and literature at Rutgers College, 1888-1900; lecturer on Roman law, University of Pennsylvania, 1900-04; head of the classical department, Manual Training

High School, Brooklyn, N. Y., 1904-26. He was prominent in movements for the betterment of the conditions of teachers, especially in New York City, and was a member of numerous learned societies. Rutgers College conferred the degree of Ph.D. on him in 1893. Dr. Shumway wrote and edited books on the classics and life of Greek and Rome, including: *A Day in Ancient Rome*; *Latin Synonyms*; *Syllabus of Classical Archaeology*; *Synopsis of Sources, Literature, and Language of Roman Law*.

Siemens, Alexander.

Sims, Charles.

Sinha, Lord.

Skinner, Belle. American philanthropist and collector of musical instruments, died at Paris, France, April 9, at the age of forty-seven. She was born at Skinnerville, Mass., and was graduated from Vassar College. Shortly after her graduation she traveled in France and was impressed with the beauty of the village of Hatton-châtel. This little place, in the St. Mihiel salient, was wrecked in the World War, and Miss Skinner devoted much of her time and large sums of money contributed mainly by herself to the work of reconstruction. This was finished just before her death, but she never saw the result of her labors. In recognition of her services to France the Government of that country made her a chevalier of the Legion of Honor and an officer of public education, and bestowed on her the Médaille de la Reconnaissance Française. She was the owner and collector of the "Belle Skinner Collection of Musical Instruments."

Skinner, Charles Rufus.

Skinner, Mrs. Henrietta Channing Dana. American author, died at New York, January 29. She was born at Cambridge, Mass., Feb. 22, 1857, the daughter of Richard Henry Dana, author of *Two Years Before the Mast*. She was educated at private schools in America and Germany, and also attended Radcliffe College, 1886-88, and studied music at Stuttgart, Germany, and at Paris under César Franck. She was a frequent contributor of short stories and travel articles to magazines, and published four books. *Espiritu Santo* (1890); *Heart and Soul* (1891); *Faith Brandon* (1911); and *Their Choice* (1913). She was honorary governor general of the Order of Descendants of Colonial Governors and a member of various other patriotic societies.

Skouloudis, Stephanos.

Sloan, William. Canadian statesman, died at Victoria, B. C., March 2, at the age of sixty-one. He was minister of mines of British Columbia since 1916, and provincial secretary from 1924 to 1927. A few months before his death he relinquished the post of provincial secretary which he had held in three administrations.

Sloane, William Milligan.

Slocum, Herbert Jermain. American army officer, colonel, U. S. A., retired, died at Washington, March 29. He was born at Cincinnati, Ohio, Apr. 25, 1855, and was graduated from the U. S. Military Academy in 1876. He was assigned to the infantry, but was transferred almost immediately to the cavalry, in which branch his army career was passed, save for three years, 1899-1902, when he was in the quartermaster corps. He was graduated from the cavalry school in 1883. At the time of the raid of Pancho Villa, of Mexico, on Columbus, N. M., on Mar. 9, 1916, Colonel Slocum was in command of the Thirtieth U. S. Cavalry on the border, and he sent troopers into Mexico after Villa and directed the fighting until General Pershing, with a large force of men, assumed command. Slocum had been organizer of the Cuban Rurales in 1900 and adviser to the Military Governor of Cuba, 1906-1909.

Sluder, Greenfield. American physician, died at his birthplace, St. Louis, Mo., October 9. Born in 1865, he was graduated from Washington University in 1888, and continued his medical studies at Vienna, 1896-98, at Berlin, 1900, and at London 1905. He served in the intervals at the Washington University Medical School as instructor 1891-96, and as lecturer in laryngology, 1898-1905. In the latter year he was appointed professor and director of otolaryngology, holding that position for twenty years. Besides belonging to a number of medical societies, including the American Medical Association, he was at one time president of the American Laryngological Association. Dr. Sluder wrote a number of medical articles, as well as two authoritative books on sinuses, *Concerning Some Headaches and Eye Disorders of Nasal Origin* (1918); and *The Method of Tonsillectomy by Means of the Alveolar Eminence of the Mandible and Gulolette, Together with Review of the Collateral Issues* (1923).

Smart, George Thomas.

Smith, Alexander.

Smith, Charles G. American insurance underwriter and financier, died at Stamford, Conn., August 19. Born in Brooklyn, N. Y., 1859, he was first employed by the Phoenix Insurance Company of that city when

he was nineteen years old. After working as special agent for the Queen Insurance Company, he became manager of the Factory Insurance Association of Hartford at its establishment in 1890; he was secretary of the Great American Insurance Company eight years later, becoming president in 1917, and chairman of the board in 1928. He was also at the head of other companies including the Massachusetts Fire & Marine Insurance Company, the American National Insurance Company, and the Mount Royal Insurance Company. Mr. Smith was one of the founders of the American Foreign Insurance Company, of which he subsequently became vice president, and was a director of several banks and corporations.

Smith, Edgar Fahs.
Smith, Brig. Gen. George Rodney. Former paymaster general U. S. Army, died at Washington, D. C., May 24. Born in New York State, May 7, 1850, he was graduated from the U. S. Military Academy and entered the Twelfth Infantry as second lieutenant, June 16, 1875. Promoted through the successive grades, he was commissioned lieutenant-colonel in the paymaster general's department, Jan. 25, 1904, and on Feb. 16, 1912, was made paymaster general with the rank of brigadier general. He retired from active service on February 15 of the following year.

Smith, James Francis.
Smith, Walter Lloyd. American jurist, died in Bermuda, March 6. He was born at Elmira, N. Y., Apr. 18, 1856. He was graduated from Princeton in 1877 and was admitted to the New York bar at Elmira, N. Y., in 1879. He practiced law at Elmira until he was appointed to the bench of the Supreme Court of New York in 1888, in succession to his father, who had retired. In 1908 he became presiding justice of the appellate division of the Third Department, serving there until 1915, when he was designated associate justice of the appellate division of the First Department. In 1925 he was compelled by ill health to resign. Judge Smith was elected to the New York Supreme Court bench three times for terms of four-teen years each.

Sonneck, Oscar George Theodore. Great-great-granddaughter of Louis Philippe, King of France, died near Evian, October 11. She was born at Neuilly, Oct. 19, 1898. Being the second daughter of the Duke of Vendôme and Princess Henriette of Belgium, she was a member of the cadet branch of the French Valois and Bourbon houses.

Sorge, Kurt Oscar.
Sorlie, Arthur Gustav.
Speck, William A. American educator and authority on Goethe, died at New Haven, Conn., October 9, at the age of sixty-three. He became a professor at Yale University, 1913, and brought with him the finest Goethe collection outside of Germany. He continually added to his material with the discernment of one familiar with Goethe, his country, and his influence. Professor Speck left to the Yale library his rare collection, which is particularly complete in the German legend, and in the English translations of the German.

Spendiarov, Alexander. A Russian composer, died in the Crimea, in March. He was born in Kachov, in 1871, and received his musical education from Rimsky-Korsakov in Petrograd. In Russia his orchestral and choral compositions are highly esteemed, while outside of his native land he is known chiefly as a composer of masterly *a capella* sacred choruses.

Spicer, J. Lindley. American leader of the Friends (Quakers), died at White Plains, N. Y., May 18. He was born at Glens Falls, N. Y., Dec. 6, 1854. He was educated at the Fort Edward Collegiate Institute and at Oakwood Seminary, a school maintained by the Friends. He served as missionary in the Adirondacks, New York State, for the American Sunday School Union, and was leader of the Friends' Meeting House in New York City, with the title of field secretary of the adult school. Mr. Spicer wrote children's stories, and was a contributor to *The American Friend* and other religious periodicals.

Sproul, William Cameron.
Squair, John. Canadian educator, died at Toronto, Ont., February 15. He was born at Bowmanville, Ont., in 1850 and received his education at the University of Toronto, graduating in 1883 with a gold medal in modern languages. Immediately after his graduation he was appointed to the teaching staff of the university, and remained there, as fellow, lecturer, associate professor, and professor of French, until he retired from active duty and became professor emeritus in 1916. In 1914 he was made an Officer de l'Instruction Publique of France, and in 1924 a chevalier of the Legion of Honor, in recognition of his work in teaching French. He was editor and author of many textbooks.

Starck, Admiral Oscar. Former Russian naval officer, died in Finland, November 15, at the age of eighty-

two. He was in high command at the outset of the Russo-Japanese War, in 1904, when the Japanese battleships defeated the Russian Navy outside the Harbor of Port Arthur.

Statler, Ellsworth Milton.
Stead, Francis Herbert. English clergyman and social reformer, died at London, January 14. He was born at Howdon-on-Tyne, England, Oct. 20, 1857, and was educated at Owens and Airedale colleges, at Glasgow University, and in Germany. He was a reporter for provincial newspapers in 1874-76, studied for the Congregational ministry (1876-84); was pastor of a church at Leicester (1884-90), and editor of the *Nonconformist and Independent* (1890-92). Actively identifying himself with social-betterment work, he became warden of the Robert Browning Settlement, 1894, and later, with Charles Booth, initiated the conferences at which the National Committee on Old-Age Pensions (1898) originated. He was the convener of the Browning Hall Conference on housing and locomotion in 1901 and originated Labor Week in 1910. He was also the convener of the League to Abolish War (1916) and of the international conference on labor and religion (1919). He published: *Handbook on Young People's Guilds* (1889); *The Kingdom of God, a Plan of Study* (1894); *How Old-Age Pensions Began to Be* (1909); *Eighteen Years in the Central City Swamp* (1913); *No More War*, a novel (1917), and other works on sociology and religion. He was the brother of the late William T. Stead, editor and reformer (1849-1912).

Steinmetz, Major Joseph Allison.
Sternberg, Leo J. Russian ethnologist, died August 14. Born in 1861, he was among the many Siberian scientists exiled, for political reasons, to Sakhalin Island. While there, 1889-99, he investigated the Gilyak, Ainu, and Orok races, and he later studied the Gilyak and Tungus people of the River Amur. Returning to Russia, he lectured at the Geographic Institute and at the University of Leningrad and was made head curator of the anthropological museum of the Academy of Sciences.

Stetson, Augusta Emma.
Stevens, Emily.
Stevenson, Eugene. American jurist, died at Paterson, N. J., May 22. He was born at Brooklyn, N. Y., June 28, 1849, and after graduation from New York University, 1870, studied at the law school of the same institution. He was admitted to the bar of New Jersey in 1874. From 1881 to 1886 he was prosecutor of Passaic County, New Jersey, returning to private practice until 1901, when he was appointed vice chancellor of the State of New Jersey. He held this office for three terms of seven years each, and retired in 1921. He was president of the New Jersey State Bar Association in 1900. From 1904 until his death he was a member of the council of New York University, and he served as its vice president from 1910 until his death. In 1920, on the fiftieth anniversary of his graduation, the university honored him with the degree of LL.D.

Stilwell, Arthur Edward. American financier and railroad builder, died at New York, September 26. He was born at Rochester, N. Y., Oct. 21, 1859, and was educated at public schools. After moving to the West and engaging in the printing business, he was an officer in the Travelers Insurance Company, of Hartford, Conn., until 1887. He built the Kansas City Sub Belt Railroad, the first of the seven railways which he financed, and also constructed a line between Kansas City and the Gulf of Mexico. He became president, in 1891, of the road which was later known as the Kansas City Southern Railway Company. He subsequently designed and built Port Arthur, Texas, and the Port Arthur Ship Canal. He founded the National Surety Company, and was its president for four years, and he was also president of the American Patents Development Company, and director of the Fort Lee & Manhattan Realty Company. Mr. Stilwell, who believed in spiritualism, wrote several books on that and other subjects.

Stock, Eugene. English missionary worker, died September 7. Born Feb. 26, 1836, he was in business until 1873, when, being editor of the *Church of England Sunday School Institute*, 1867-75, he became secretary of the Church Missionary Society, a position which he held until 1906, editing the society's publications until 1902. While employed by the Church he traveled in the colonies, in India, and in the United States, and he became one of the original members of the London Diocesan Conference, 1883, and the House of Laymen, 1885. He was made Diocesan Lay Reader for the Diocese of London in 1891, and subsequently for the Diocese of Rochester and Winchester, and he became a member of the National Church Assembly at its establishment in 1925. He received the D.C.L. degree from the University of Durham in 1908. Besides contributing to church magazines in England and the

United States, he wrote several books, including: *Lessons on the Life of Our Lord* (1871); *Lesson Studies on Genesis* (1880); *The History of the Church Missionary Society*, 4 vols. (1889-1916); *Story of the Bible* (1906); *English Church in the Nineteenth Century* (1919); and *Beginnings in India* (1917).

Stone, Martin F. American physician, died at Baltimore, Md., July 29, at the age of forty-three. He was a special student in medicine at Johns Hopkins University in 1908, and a year later became head of a sanatorium at Towson, Md. In 1921 he was appointed an instructor in clinical medicine at Johns Hopkins, and he filled that position until his death. He was held in high esteem as a student of tuberculosis and a writer and speaker on the subject; during the World War he served the American Government as a consultant in lung diseases, and he made a survey of the government tuberculosis hospitals. In the later years of the War he was medical director of clinics for the American Red Cross in Italy.

Stranahan, Nevada N. American lawyer and officeholder, died at Peterborough, England, July 6. He was born in Oswego County, New York, Feb. 27, 1861. He was educated at the Falley Seminary and at the law school of Columbia University, and began the practice of law at Fulton, N. Y., soon after his admission to the bar in 1884. He was active in the Republican politics of New York State, and served four years in the State Assembly and seven years in the State Senate. After holding office as district attorney of Oswego County, he was appointed in 1901 collector of the Port of New York, for a four-year term. He was reappointed in 1905, but two years later was compelled by ill health to relinquish the office.

Strathclyde, Alexander Ure.
Stratton, Eliphalet Platt. American marine engineer, naval architect and inventor, died at Garden City, N. Y., March 22. He was born at College Point, N. Y., June 12, 1844. After studying at the Walnut Hill Academy, Geneva, N. Y., and the Flushing Institute, Flushing, N. Y., he became connected with the George Quintard Iron Works of New York and the New York Mail Steamship Company. He was also chief engineer for the New York and West India Steamship Company, and an inspector of steam vessels in the port of New York. For a time he was chief engineer and chief surveyor of the American Bureau of Shipping and a member of its board of governors. Among his inventions was the Stratton separator, a device for use in handling steam and hot water. He was a member of societies of naval architects and engineers.

Stratton, Frederick Eugene. American educator, died at New York, June 4. He was born at Athol, Mass., July 5, 1847, and was graduated from Williams College in 1871; in his senior year he was a member of a scientific expedition sent by the college to Central America. He pursued postgraduate studies at Harvard University, the University of California, and the University of Wisconsin. Until 1883 he taught in New England schools, and for the next nine years was high school principal at Davenport, Iowa. From 1892 to 1904 he was principal of an academy connected with Carleton College, Northfield, Minn., and then taught Greek at the college. He went to Fargo College as professor of Greek in 1906, was dean of the college, 1906-11, and college librarian until his retirement in 1923. He wrote: *The Game of the Greek Verb*.

Straus, Simon William. American financier, died at Chicago, Ill., April 2. He was born at Ligonier, Ind., Dec. 23, 1866, and after receiving a public-school education became connected with his father's mortgage and loan business in 1884. He was admitted as a partner in 1888, and in 1898 became president of S. W. Straus & Company, Incorporated. At the time of his death he was president of the Straus Brothers Company and Straus Brothers Investment Company; also of the Franklin Trust and Savings Bank, of Chicago, and of the American Society for Thrift. Mr. Straus was the originator of the "Straus plan" for financing loans on buildings and industrial plants.

Stritt, Marie. German actress and suffrage leader, died September 18. Born at Schässburg, Feb. 18, 1855, the daughter of Josef Bacon, she was educated privately, and on Oct. 24, 1879, married Albert Stritt. After becoming a successful actress, she devoted her interests to the woman-suffrage movement, writing on the subject and editing the *Frauenfrage* from 1899 until 1921. She was also president of a suffrage organization from October, 1911, until October, 1919.

Strong, Benjamin.

Stuart, Leslie.

Stuck, Franz von. German painter, died at Munich, August 30. He was born at Tettweiss, Lower Bavaria, 1863, and while he attended the Munich Academy, he contributed comic drawings to *Fliegende Blätter*, as well as to other papers. He first made a reputation as a painter with "The Guardian Angel of Paradise,"

being known as a romanticist with leanings to brilliant coloring and decorative composition. For a number of years his primitively simplified allegorical studies were in vogue in Europe and in the United States. Among the best known of his paintings are, "Die Sünde," which hangs in Palermo, "Medusa," in the Venice Gallery, "Wilde Jagd," in the Carnegie Gallery, Pittsburgh, "Der Krieg," (War) in the Munich Gallery, and "Die Sphinx," in the Budapest Gallery. He was also a sculptor and architect of talent.

Sudermann, Hermann.

Summers, Charles Lee. American physician, died at Baltimore, Md., July 15. He was sixty-four years old. Dr. Summers had an international reputation as a pediatrician, and was organizer of the babies' and children's clinic of the University Hospital at Baltimore. For a number of years he was a member of the staff of the Children's Hospital of the University of Vienna, one of the largest institutions of its kind. In the ten-year period from the time of his organization of the children's clinic at Baltimore until his death, more than 120,000 children received free treatment there, it was estimated.

Svevo, Italo.

Sweeney, Edward C. American cable manager, died at New York, January 10. He was born at Liverpool, England, Apr. 13, 1857, and began his career as a telegrapher with the Electric & International Telegraph Company, the London & Northwestern Railway Company, the British Postoffice and the Direct United States Cable Company. He acted as operator for the last-named company in England and at Torbay, N. S. When the French Cable Company was established in 1879, Mr. Sweeney was the first telegrapher selected, and he remained with the company until he retired as manager. When he died he was vice president of the United States & Hayti Cable Company.

Sweet, Owen Jay. American soldier, brigadier general U. S. Army, retired, died at New York, January 4. He was born at Kent, Conn., Sept. 4, 1845, and was barely seventeen when he was commissioned as second lieutenant in the One Hundred and Thirty-seventh New York Infantry, on Sept. 6, 1862, and went into service immediately in the Union Army in the Civil War. He fought in several battles, including Fredericksburg, Chancellorsville, and Gettysburg, and was with Sherman on the march to the sea, being the first Union officer to enter the Confederate fortifications at Savannah. At the end of the war he was brevetted major for "gallant and meritorious services." He entered the regular service as a lieutenant, and was advanced through the grades until he was retired with the rank of brigadier general in 1909. In the meantime he served against the Indians and in the Philippines.

Sweet, Thaddeus C. American manufacturer and representative in Congress of the Thirty-second New York District, died at Whitney Point, N. Y., May 1, in an aviation accident. He was born at Phoenix, N. Y., Nov. 16, 1872. He was educated at the public schools and high school of Phoenix. At eighteen he became a clerk in a clothing store, and for two years was a traveling salesman. He entered business with his brother in 1895 under the firm name of Sweet Bros. Paper Manufacturing Company, and was president of the firm until his death. He was also chairman of the board of directors of the Oswego County Trust Company. Mr. Sweet was a Republican and was a member of the New York State Assembly from 1909 to 1920; he was speaker from 1914 to 1920. He was elected to Congress in 1923, 1925, and 1927.

Swinburne, William Thomas. Rear admiral, U. S. N., retired, died at San Diego, Calif., March 3. He was one of the few remaining officers of the navy who had seen service in the Civil War. He was born at Newport, R. I., Aug. 24, 1847, and entered the navy Sept. 29, 1862. After graduating from the U. S. Naval Academy in 1866, he served on various stations. He reached the rank of commander in 1896, and commanded the *Helena* in the North Atlantic fleet during the Spanish-American War. He captured the Spanish steamer, *Miguel Jovar*, and participated in the engagements of Lunas and Manzanilla. In 1899 he joined the fleet under Admiral Dewey at Manila, and later assisted General Lawton in his campaign. Promoted to captain in 1901, he commanded the *Texas* in 1902-04. He was a member of the General Board in 1904-06, and in the latter year was made a rear admiral. Thereafter he was commander-in-chief of the Pacific squadron until 1909, in which year, after a short period at the Naval War College, he was retired.

Tacci, Giovanni Cardinal. Roman Catholic prelate, died at Rome, June 30, at the age of sixty-four. He was born at Mogliano, Italy. He was apostolic delegate at Constantinople from 1904 to 1907, when he became papal nuncio at Belgium. In 1916 he became major domo of the Holy See, and in 1918 prefect of the sacred palaces. On June 16, 1921, he was elevated to

the cardinalate, with the title of Archbishop of Nicæa, and was made secretary of the Congregation of the Eastern Church, of which Congregation the Pope himself is prefect. It exercises jurisdiction over all persons and things pertaining to the Oriental Rite.

Talbot, The Rt. Rev. Ethelbert.

Talbot, Howard.

Tams, J. Frederick. American naval architect and yachtman, died at Tuxedo Park, N. Y., May 27, at the age of eighty. He was born at Philadelphia, Pa., and was educated at New York. He was noted for more than a generation as one of the leading designers of yachts in America; from 1900 to 1913 he was associated with Clinton H. Crane in the firm of Tams, Lemoine & Crane. Their boats were keen rivals of those of the Herreshoffs for supremacy in American waters.

Taylor, Robert Fenwick. American jurist, former chief justice of the Supreme Court of Florida, died at Tallahassee, Fla., February 26. He was born in the District of Beaufort, South Carolina, Mar. 19, 1849, and was educated by private tutors and at the Maryland Military Institute. He was admitted to the bar in 1870, and began practice in Florida. He was a member of the Florida constitutional convention in 1885, and was appointed an associate justice of the Supreme Court of the State in 1891; he was elected to the same office in 1892 and reelected four times for six-year terms. He served three times as chief justice, and was retired in 1925, his long service being praised by the legislature, which voted to him full pay for life.

Taylor, William Sylvester.

Tegnér, Esaias. Swedish educator and philologist, died at Lund, November 28, at the age of eighty-four. Professor Tegnér, who was a grandson of Esaias Tegnér, the poet, was dean of the Swedish Academy. He wrote many textbooks in philology.

Tennyson, Hallam.

Terry, Dame Ellen (Alice).

Tetuan, Duke of. See Vargas, Juan O'Donnell.

Thompson, Edward Raymond.

Thompson, Henry Yates. Former proprietor of the *Pall Mall Gazette*, London, and collector of books and illuminated manuscripts, died July 8. He was born at Dingle Cottage, near Liverpool, England, Dec. 15, 1838. He was educated at Harrow and at Trinity College, Cambridge, winning honors in the classics at school and college, and was called to the bar at Lincoln's Inn, 1867. He did not practice his profession, however. In 1868 he was secretary to Earl Spencer, Lord Lieutenant of Ireland. In 1878 he married the daughter of George Smith, founder and proprietor of the *Pall Mall Gazette*, and the latter turned over the paper to his son-in-law, who conducted it until its sale to W. W. Astor in 1893. Subsequently, Mr. Thompson devoted himself to the collection of illuminated manuscripts and rare books, many of which he presented to the British Museum and other English public institutions. The sales of his collections in 1919-21 ranked among the greatest of their kind ever held. He was made an Officer of the French Legion of Honor in 1907.

Thompson, James Walter.

Thompson, Jefferson de Mont. American financier, philanthropist, and promoter of aviation, died at New York, January 28. He was born at Huntsville, Ala., May 15, 1864. After graduation from the University of Alabama in 1884, he entered business in New York. He became interested in aviation before the World War, and visited Europe to study its possibilities, especially with reference to the use of the airplane in police work. He was chairman of the New York State Aviation Commission. He was also a member of the Delaware River Water Resource Commission established by the State of New York to cooperate with similar New Jersey and Pennsylvania bodies in the devising of ways and means of apportioning and using the water of the river by the three States.

Thompson, William Howard. American officeholder, former U. S. Senator from Kansas, died at Washington, D. C., February 9. He was born at Crawfordsville, Ind., Oct. 14, 1871, and removed to Kansas with his parents when he was nine. After graduating from the Seneca, Kan., Normal School in 1888 he studied law under his father, and was admitted to the Kansas bar in 1894. A Democrat in politics, he served as clerk of the Kansas Court of Appeals from 1897 to 1901, was judge of the Thirty-second District of Kansas in 1906-13, and elected United States Senator for the term of 1913-19. He was a delegate-at-large from Kansas to the Democratic National Convention of 1916 and a member of the platform committee. After he returned from the Senate he practiced law at Kansas City, Kan., and at Tulsa, Oklahoma, to which State he moved in 1923. Four years afterward he went to Washington, D. C., to live.

Thornton-Duesbery, The Rt. Rev. Charles Leonard.

English churchman, Bishop of Sodor and Man, died March 11. He was born at Glen Helen, Isle of Man, Feb. 3, 1867, and became a deacon of the Church of England in 1890 after studying at Shattallan Hall, Isle of Man, and at Trinity College, Dublin. He became a priest in 1891, and held various charges in small English cities and in London before becoming Bishop of Sodor and Man in 1925. His see is the smallest of the Church of England, and the incumbent has the right to a seat but not to a vote in the House of Lords. Bishop Thornton-Duesbery was an evangelical of a liberal type.

Thornycroft, Sir John Isaac.

Thurber, Howard Ford. American engineer and telephone company official, died at New York, April 21. He was born at Brooklyn, N. Y., Aug. 6, 1869, and studied at the Polytechnic Institute of Brooklyn and Cornell University, obtaining the degree of M. E. in 1890. In the same year he became associated with the development of the telephone (then in its early years) as engineer assistant, Metropolitan Telephone & Telegraph Company, New York. He remained with that company and its successors until shortly before his death. He became president of the New York Telephone Company in 1919 and chairman of the board in 1924, retiring in 1927 because of ill health.

Tierney, Father Richard Henry.

Titterington, Morris M. American inventor, died at Pottsville, Pa., July 11, in an airplane accident. Mr. Titterington was an inventor and a manufacturer of instruments for the use of fliers, especially of the earth inductor compass, which he invented. He learned to fly in 1914, joined the Sperry Gyroscope Company, and was sent to France and England to study aviation instruments. During the World War he worked with the Sperrys in the development of an aerial torpedo. In 1921, with Charles Colvin and the late Brice Goldsborough, he formed the Pioneer Instrument Company, of which he was vice president.

Tolman, Albert Harris. American educator and Shakespearean authority, died at Chicago, December 25. He was born at Lanesboro, Mass., June 17, 1856, and after graduating from Williams College in 1877, served as principal of the high school at Chicopee Falls, Mass., 1879-82, before continuing his studies at Johns Hopkins University, 1882-84. He was professor of English at Ripon College, Wis., 1884-93, and there joined the first faculty of the University of Chicago, being assistant professor of English literature, 1893-1907, associate professor, 1907-14, and professor from 1914 until he was made professor emeritus in 1925. He also served as assistant examiner and dean in the colleges, 1895-1900. Williams College conferred on him the L.H.D. degree in 1916. Dr. Tolman edited *Julius Cæsar*, and an *Introduction to Shakespeare* (1901), and wrote: *The Views about Hamlet, and Other Essays* (1904); *Questions on Shakespeare*, 2 vols. (1910); *Questions on Shakespeare, Select Comedies*, 7 pamphlets (1912); and *Falstaff and other Shakespearean Topics* (1925).

Toole, Wade. Canadian professor of animal husbandry and head of that department at the College of Agriculture of Ontario, died at Guelph, Ont., January 11. He was one of the leading authorities in the Dominion of Canada on livestock, and was head of his department at the college for ten years.

Torrey, Reuben Archer.

Towne, Charles Arnette.

Tracy, James Madison.

Tracy, Louis.

Trematon, Viscount. Son and heir of the Earl of Athlone, Governor General of South Africa, died at Lyons, France, April 15, as the result of an automobile accident on April 1. He was a nephew of Queen Mary of England, sister of the Earl of Athlone. He was born at Claremont, Usher, England, Aug. 24, 1907, and was christened Rupert Alexander George Augustus. The family name was originally Teck, but this was abandoned during the World War, with other German names, ranks, and titles, when the former Duke of Teck became the Marquis of Cambridge and his younger brother was created Earl of Athlone and Viscount Trematon. The latter title was borne by the son of the earl, according to custom, as a "courtesy" title. The mother of the late viscount was Princess Alice of Albany, a member of the British royal family. The Viscount was educated at Eton, and, from 1925, at Cambridge.

Trepov, Prince Alexander Feodorovitch.

Trevelyan, Sir George Otto.

Trickett, William.

Tschudi, Georg J. Friedrich von. President of the German Air Council, died at Berlin, October 7. He was born at Wiesbaden, Jan. 29, 1862, and he entered the German military service in 1881. He was influential in the development of aeronautics, and was appointed commander of the balloon division of the army in 1895, accompanying the German balloon ex-

hibition to the St. Louis Exposition in 1904. On his return from the United States, he organized the wireless telegraph division in the army's signal service. He served during the World War as commander of the German air base at Antwerp. After the war he continued to work in the aviation department, and in 1928 he managed the arrangements for an airplane exhibition in Berlin. Besides heading the air council, Major Tschudi was vice president of the Aero Club.

Twitchell, Herbert Kenaston, American banker, died at Brooklyn, July 11. He was born at Weybridge, Vt., Nov. 26, 1865. He studied at Beeman Academy, New Haven, Vt., and at the age of nineteen entered the insurance business. His first banking position was with the Charter Oak National Bank of Hartford, Conn., 1887, and in 1889 he became assistant teller of the Chase National Bank, New York. He remained with that bank until 1907, when he was made assistant cashier of the Chemical National Bank. He rose to the vice presidency of the latter institution in 1911 and to the presidency in 1917. In 1920 he became chairman of the board, and in 1923 he assumed the presidency of the Seamen's Bank for Savings, holding that office until his death. He was a director or official in many financial and commercial organizations, and was also one of the commissioners of the Port of New York Authority. Mr. Twitchell was active in philanthropic, educational, and Presbyterian Church affairs. Middlebury College bestowed the degree of LL.D. on him in 1926.

Urach, Duke of (Count William of Württemberg). Head of a junior branch of the formerly reigning house of Württemberg, died at Rapallo, Italy, March 26. He was born at Stuttgart, Germany, Sept. 27, 1897. He was descended through his mother from the royal house of Monaco, and he married Princess Wiltrude of Bavaria in 1924. He served in the World War in the German artillery.

Vail, Harry E. American rowing coach, died at Gagetown, N. B., Canada, October 8, at the age of sixty-seven. After several years as a successful sculler, he turned his attention to coaching club crews, and was with the Neptune Rowing Club, St. John, N. B., the West Pennsylvania and the Vesper Boat clubs of Philadelphia, before going to the Ariel Boat Club, Baltimore, where he remained for eighteen years. He accepted a position as associate coach at Harvard University, 1900, and in 1909 he was made head coach at Georgetown University. He was appointed coach of the Wisconsin University crew, 1911, where he worked until his death.

Valencia, Ramon Gonaes. Former president of Colombia, died October 4. He resigned his position as vice president of the Republic in March, 1905. During the revolt centering at Barranquilla, 1909, when President General Rafael Reyes left the country, Dr. Valencia was proclaimed President and established at the capital, Bogotá. Word of Reyes' formal resignation came, Aug. 3, 1909, and Restrepo was then elected President.

Vargas O'Donnell, Juan, Duke of Tetuan. Spanish Minister of War, died October 12. He was born in 1864, the third Duke of Tetuan. His Irish ancestors had moved to Spain during King James II's reign, and Queen Isabella II had granted his grandfather a dukedom in 1859. The Duke, who had been Governor of Madrid, acted as War Minister during Primo de Rivera's directorate, from 1923 until Dec. 3, 1925, and he served at the head of the War Department under the de Rivera civil government, until his death.

Varrentrapp, Rear Admiral. German naval officer, died at his birthplace, Frankfort-on-Main, December 24. Admiral Varrentrapp commanded the *Schlesien*, of the Second Battleship Squadron, during the battle of Jutland, May 31, 1916. He retired from his command of the Wilhelmshafen naval station after the revolution of November, 1918.

Vegas, Herera, Argentine banker and politician, died November 17. He was president of the Banco Hipotecario, at Buenos Aires, and he served as minister of finance, by appointment of President Dr. Marcelo T. de Alvear, 1922-23.

Vellie, Willard Lamb. American manufacturer, died at his birthplace, Moline, Ill., October 24. Born May 10, 1866, he attended Philby's Academy, Andover, and was graduated from Yale in 1888. He first worked in his grandfather's firm, Deere & Company, manufacturers of agricultural machinery, later becoming director. He soon added to the already extensive Deere interests by organizing the Vellie Carriage Company. He formed the Vellie Motor Corporation a few years later, and also founded the Vellie Monocoupe Aircraft Corporation, being president of both organizations at the time of his death.

Venne, Lottie. English actress, died at London, July 16. She was born May 28, 1852. She made her debut at London in 1867 in *A Dream of Venice*, and thereafter, until her last stage appearance in 1924 as

the Duchess of Penny in a revival of *The Claimant*, she acted in more than two hundred plays, many of which were successes. Among her recent rôles were those of Mrs. Gilwattle in *The Man From Blankley's* (1917); the ex-Queen of the Paradise Islands in *Press the Button* (1918); Mrs. Shuttleworth in *Home and Beauty* (1919); Mary Knowle in *The Romantic Age* (1920), and Lady Catherine Champion-Cheney in *The Circle* (1921).

Villard, Mrs. Fanny Garrison.

Wagner, Frank Caspar. American engineer and college president, was killed in an automobile accident near Terre Haute, Ind., November 21. He was born at Ann Arbor, Mich., Oct. 5, 1864, and was graduated from the University of Michigan in 1884, receiving the B.S. degree the following year. He did engineering work for the Thomson-Houston Electric Company, 1886-89, and after being appointed assistant professor of mechanical engineering at the University of Michigan in 1890, he taught at that institution until 1896. He then joined the faculty of the Rose Polytechnic Institute, serving as associate professor of steam engineering, 1896-1904, professor of steam and electrical engineering 1904-20, professor of mechanical engineering 1920-23, and president of the Institute from 1923 until his death. He had also been administrative engineer of Indiana for the United States Fuel Administration, in 1918. The Rose Polytechnic Institute conferred the D.Sc. degree on Dr. Wagner in 1924, and the University of Michigan made him a Doctor of Engineering in 1927. Besides contributing to scientific journals, he wrote *Notes on Applied Electricity* (1903).

Wahl, Maj. Gen. Lutz.

Walker, Thomas Barlow.

Walls, The Rt. Rev. Frederic. English churchman, former bishop (Anglican) of Wellington, N. Z., died at Bournemouth, England, June 24. He was born at Hastings, England, in 1853. He was educated at St. Paul's School and at Caius College, Cambridge University, and distinguished himself in the classics and theology, winning a fellowship at the university. He was dean of Caius College, 1878-91, and divinity lecturer, 1878-94; select preacher to the university in 1897, 1903, and 1908, and held other offices of distinction at Cambridge. In 1895 he became bishop of Wellington, N. Z., and remained there until 1911. In that year he returned to England to become archdeacon of Wilts, and in 1916-19 was archdeacon of Sherburne. From 1913 he was canon of Salisbury. He was a man of high intellectual power and one of the leaders of the Established Church in England.

Walsh, Thomas. American poet and critic, died at his birthplace, Brooklyn, October 29. Born Oct. 14, 1875, he attended Georgetown University, 1893-92, and he continued post-graduate work at Columbia, 1892-95. He wrote articles, poems, and criticisms for English and American magazines, and was a contributor or editor of various reference works. The Society of the Army of the Potomac awarded him its honorary medal for a memorial ode on the Battle of Antietam, and from Spain he received the Grand Cross of Isabel the Catholic. Being an authority on the literature of Spain and South America, he also received various official recognitions from both, becoming a member of the Royal Academy of Seville. Georgetown University gave him the Litt.D. degree, and Notre Dame honored him with the LL.D. degree in 1917. He was associate editor of the *Commonweal*, but he was best known through the poetry which he wrote and the collections he edited. These works included: *The Prison Ships* (1909); *The Pilgrim Kings* (1915); *Eleven Poems of Rubén Darío* (1916); *Gardens Overseas and Other Poems* (1917); *Hispanic Anthology* (1919); *Don Folquet* (1920); and *The Catholic Anthology* (1927).

Wanamaker, Lewis Rodman.

Ward, Colonel Sir Edward (Willis Duncan). Supply officer in the British Army, died at Paris, September 11. He was born at Oban, Scotland, Dec. 17, 1853, and after attending private schools, entered the British army in 1874. Becoming major in the Army Service Corps the following year, he served with the Sudan Expedition in 1885. After staff service in Ireland and Great Britain he was sent out with the Ashanti Expedition, 1895-96. Colonel Ward was in charge of the food supply for Ladysmith during the siege from Nov. 2, 1899, to Feb. 28, 1900, and was Director of Supplies of the South African Field Force. Returning from the war, Colonel Ward was appointed assistant quartermaster general, at London, in February, 1901, and the following April he was made Permanent Under-Secretary of State in the War Office, holding that position until January, 1914. He did much to perfect the organization of the army, contributing to the success of Haldane's reforms, and instituting the Officers' Training Corps. At the beginning of the World War when it was necessary to reinforce the Metropolitan Police, the Home Office appointed Colonel Ward

chief staff officer to reorganize and manage the special constabulary and its Reserve, a service in which he continued until his resignation in 1924. Colonel Ward was created a Knight Commander of the Bath in 1900, a Knight Commander of the Royal Victorian Order in 1907, a Baronet in 1914, and a Knight of the Grand Cross of the British Empire in 1919. He was also an officer in the French Legion of Honor, and he was made a Knight of Grace in the Order of Saint John of Jerusalem in 1920.

Ward, Willard Parker. American mining engineer, died at Savannah, Ga., January 17. He was born at New York, Oct. 12, 1845, and was graduated from Columbia College in 1865; he studied at the mining schools at Clausthal and Berlin, Germany, 1865-69. He was engaged in the profession of mining engineering from 1869, especially in the mining of gold and silver from the Western States of the United States after 1883. Mr. Ward was the first maker of ferromanganese in the United States, in 1874.

Warren, Willard Clinton. American publisher, died at New York, March 8. He was born at New Canaan, Conn., Jan. 9, 1866, and received a public-school education. He began his publishing business by establishing the *Commercial Record*, in New Haven, Conn., in 1884. From this beginning he expanded his interests until he became head of one of the largest magazine groups in the United States, with publication at New York, Boston, Providence, R. I., and New Haven, Conn. His magazines included *The Bankers Magazine*, *The House Furnishing Review*, *Banker and Tradesman*, *Banking Law Journal*, *Commercial Record*, *American Shoemaking*, *Fibre and Fabric*, *Record and Guide*, *The Business Law Journal*, *Granite*, *Marble and Bronze*, and *The New England Grocer*.

Warwick, Earl of. Washburn, Charles Grenfell. American lawyer and public official, died at Lenox, Mass., May 25. He was born at Worcester, Mass., Jan. 28, 1857. He was graduated from Worcester Polytechnic Institute, 1875, and from Harvard in 1880, and was a classmate at Harvard of Theodore Roosevelt. He entered the wire business on leaving college and became a successful manufacturer, in the meantime studying law and being admitted to the Massachusetts bar in 1887. He was elected as a Republican to the Massachusetts House of Representatives, in 1897 and to the State Senate in 1899, and in 1902 was a member of the commission to revise the corporation laws of the State. In 1906 he was elected to the national House of Representatives to serve out an unexpired term, and was reelected in 1907 and 1909. He was a director of the Federal Reserve Bank of Boston. He wrote a biography of Theodore Roosevelt.

Washing, William Henry. Weiller, Jean-Lazare. French senator and financier of scientific projects, died August 12. Born in France in 1859, he attended the Lycée St. Louis, and went to Oxford University, later entering the diplomatic service in the course of which he visited the United States. He established the first telephone service in France, and was said to have invented taximeters. It was he who offered the Wright Brothers the opportunity of going to France in 1908, to demonstrate their biplanes, and he secured for France the Wright patents, and donated a plane to the French War Office. M. Weiller was serving as a senator from the Lower Rhine at the time of his death.

Weiss, André.

Welch, Samuel Wallace. American physician and sanitarian died at Montgomery, Ala., August 22. He was born at Alpine, Ala. Feb. 14, 1861, and, after being graduated from Howard College, Marion, Ala., and continuing his studies at Tulane University, he decided to take up medicine, and was graduated from the College of Physicians and Surgeons, at Baltimore, in 1893, later doing post-graduate work at Johns Hopkins and at the College of Physicians and Surgeons at Columbia University. He returned to Alpine in 1893 to practice, and four years later he was elected to the county board of health. In 1903 he was made a member of the State committee of public health, and of the State board of medical examiners, subsequently becoming chairman of the latter organization. He became State health officer in 1917, holding that position until his death. In 1919 he prepared and had put through the legislature, a bill amending the medical laws of Alabama. From 1922 he was chairman of the public health division of the American Medical Association and of the Southern Medical Association, becoming councillor of the Southern body in 1925. He was, at one time, president of the Alabama State Medical Association and from 1927-28 he presided over the Association of Health Authorities of North America. He also served as a delegate to the international tuberculosis conference at St. Louis in 1905, and at an international convention on demography

and hygiene at Washington, D. C., in 1912. From 1895-1915, Dr. Welch acted on the board of trustees of Howard College and in 1928 he received the LL.D. degree from the University of Alabama.

Westenhaver, David C. Weyman, Stanley John. Wharton, Anne Hollingsworth. Wharton, Henry M. American Baptist clergyman, editor, and author, died at Baltimore, Md., June 23. He served for a time in the Confederate Army in the Civil War. He studied law and practiced for five years before entering the Baptist ministry, for which he prepared at the Southern Baptist Theological Seminary. He was pastor of churches at Luray, Va., and Baltimore. He was chaplain general of the United Confederate Veterans for many years until 1927. He was publisher and editor of the *Baltimore Baptist* and wrote several books, his latest being *Messages of Mercy*, published in 1927.

Whelan, Charles Elbert. American lawyer, author, and politician, died at Madison, Wis., November 30. Born at Mazomanie, Wis., Aug. 26, 1862, he worked on several newspapers before moving to Madison, and becoming city editor of *The Madison Journal*. He attended the University of Wisconsin at the same time, receiving the LL.D. degree in 1894. After being assistant attorney-general of Wisconsin, 1896-97, he was elected mayor of the city on the Republican ticket in 1898, serving for one term. He was made president of the Wisconsin League of Municipalities in the same year. From 1899-1900 he was grand master of the Masons of Wisconsin. Mr. Whelan became supreme national lecturer of the Modern Woodmen of America in 1898, holding that position until 1926, when he was made editor and publisher of the organization's magazine. He wrote several books, including: *He That Seeketh Findeth* (1918); *Essential Truth in Religion* (1922); a play called *The White Minstrels* (1922); *The State—The Child—The Part-Time School* (1924); *Poems* (1926), and *Inspirations* (1927).

Whipple, Charles A. American mural painter, died at Washington, D. C., May 2, at the age of sixty-eight. For many years Mr. Whipple was engaged in retouching the famous Brumidi paintings and others in the United States Capitol, Washington, D. C., and he was a familiar figure to the thousands of visitors to the building. He was known as the painter of a panel, "The Spirit of 1917," in the Capitol, and he also painted several figures in the historical frieze around the rotunda. Mr. Whipple was commissioned annually by Congress to work on the Capitol paintings.

Whiteing, Richard.

Whitman, William.

Wien, Wilhelm.

Wilber, David Forrest. Former American consul, died at Upper Dam, Me., August 14. He was born at Milford, N. Y., Dec. 7, 1859, and was graduated from Cazenovia (N. Y.) Seminary in 1879. Moving to Oneonta, N. Y., he engaged in farming and stock breeding. In 1894 he became a member of the New York State cattle tuberculosis committee, and he was later elected president of the Holstein-Friesian Association of America, and of the American Cheviot Sheep Association of the United States and Canada. In 1895 he was elected to Congress from the Twenty-first New York District, and was reelected to the succeeding Congress in 1897. He entered the consular service in 1903, being stationed at Barbados, and two years later he became consul general at Singapore. He afterward was given successive assignments as consul in Halifax (1907-09), Kobe, Japan, (1909-10), Vancouver, B. C., (1910-13) and Zurich (1913-14). He served at Genoa, Italy, 1915-21, and in the latter year became consul general at Auckland, New Zealand. In 1922 he was given a similar post at Wellington. After his return to the United States, Mr. Wilber was a Republican presidential elector from New York in 1924.

Wilbur, Cressy Livingston.

Wilcox, Delos Franklin.

Wilder, Harris Hawthorne.

Wille, Bruno. German author, died September 14. Born Feb. 6, 1860, he became one of the most talented literary representatives of the naturalistic cult. His poetry and fiction occupy a place in modern German literature similar to that of the scientific writings of Wilhelm Bölsche. Dr. Wille was at the head of the "Allgemeinde" of Berlin, and he aided in the foundation of the *Freie Volksbühne*, which proved an important influence in the current German drama.

Williams, Frederick Wells.

Williams, Henry G.

Williams, Samuel. American editor, died at Cincinnati, Ohio, February 14. He was born at Chillicothe, Ohio, Dec. 2, 1827, and was graduated from Ohio Wesleyan University in 1848. It was said that Dr. Williams, who had the honorary degree of LL.D., was at the time of his death the oldest American graduate, the oldest alumnus of Ohio Wesleyan University, and

the oldest member of Phi Beta Kappa. He was editor for the Methodist Book Concern, of Cincinnati, for more than fifty years, and he accumulated a library of books on the history of the Methodist Episcopal Church that was said to be unequalled in the United States. Dr. Williams bequeathed this collection to Ohio Wesleyan University.

Williams, Talcott.
Willis, Frank Bartlette.
Wills, Sir George Alfred.
Wilson, Bishop Luther Barton.
Winant, Forrest. American actor, died at Alameda, Calif., February 1. He was born at New York, Feb. 21, 1888. He was educated at Stevens Institute. His success in school plays brought him to the professional stage, and he made his first professional appearance at New York in 1907. He appeared frequently in stock companies and toured the United States in *The Three of Us*. After appearing in several other plays, he made his greatest success as a co-star with Fay Bainter in *East Is West*. He took charge of a stock company house at New Brunswick, N. J., relinquishing it, by reason of ill health, about a year before his death.

Wingate, George Wood.
Winslow, Col. Eben Eveleth.
Wise, Thomas Alfred.
Woelfkin, Cornelius.
Wood, James J.
Works, John Downey.
Wrangel, General Peter Nicholaievitch.
Wright, Arthur Silas. American educator, died December 2. Born at Decatur, N. Y., Mar. 7, 1858; he was graduated from Union College in 1882, receiving the A.M. degree from that institution in 1886, after having attended the Princeton Theological Seminary, 1884-85. He then studied at the University of Leipzig, 1885-87. On his return to the United States he became junior professor of modern languages at Union College, 1887-92, and in 1893 he was appointed professor of modern languages at Case School of Applied Science, retiring from that position in 1924. Union conferred on him the L.H.D. degree in 1921.

Wright, James Homer. American pathologist, died at Boston, January 9. He was born at Pittsburgh, Pa., Apr. 8, 1869. He was graduated from Johns Hopkins University in 1890 and from the medical department of the University of Maryland in 1892. He was the Thomas A. Scott fellow in hygiene at Harvard University, 1892-93. From 1893 to 1896 he was assistant in pathology at Harvard, from 1896 to 1907, instructor, and from 1897 until his death, assistant professor. He was also director of the pathological laboratory of the Massachusetts General Hospital, Boston, from 1896 on. Harvard conferred on him the honorary degree of S.D. in 1905 and the University of Missouri that of Sc.D. in 1907. With Dr. F. B. Mallory, he was the author of *Pathological Technique*, which was published in 1897 and which went into eight editions.

Wrong, Edward Murray.
Wylie, Elinor.
Wynn-Carrington, Charles Robert. See Lincolnshire, First Marquis of.

Yechiel, Meier. Polish Jewish scholar and ascetic, died in Poland, March 12. He was born at Skiernewice, Poland. Early in life he established an independent school of Chasidim ("the pious" or "saints"), whose ascetic principles he personified in a very high degree. He and his followers held that life on earth is not to be enjoyed, and for more than forty years he fasted six days every week, eating only on Saturday, when fasting is forbidden by Jewish law. He also went to bed fully clad in order not to enjoy his rest. As the "Ostrovitzer Rabbi," head of the Jewish community at Ostrowiec, Poland, his reputation was widespread in Poland and adjoining countries, and he had many followers. He was a recognized authority on Jewish law and customs, and wrote many books on the subject, but he forbade their publication in his lifetime.

York, Edward Palmer.
Young, Rev. John B.
Young, William Alexander.
Yuan-hung, Li. See Li Yuan-hung.
Yule, Sir David, Bart. Anglo-Indian merchant, died at St. Albans, England, July 3. He was born Aug. 4, 1858, of Scotch ancestry, and at an early age went to India to engage in business. He rose steadily in wealth and influence for more than fifty years at Calcutta and eventually controlled 80 separate companies, most of which he had built up himself. The principal firm was Andrew Yule & Company, Ltd. He was a director of the Midland Bank (England), the Mercantile Bank of India, Vickers, Ltd., and the Royal Exchange Assurance. He was considered one of the wealthiest men in the British Empire, and he gave away large sums of money to charities and public enterprises. He was knighted in 1912 and elevated to a baronetcy in 1922.

Zaldumbide, Carlos Freile. Former President of Ecuador, died at Paris, August 22. Being president of the Senate when President Emilio Estrada died in 1911, he became acting President of the Republic, and he reassumed the office for a short time after President Flavio Alfaro was assassinated the following year.

Ziwet, Alexander.

NEGRI SEMBILAN, nã'grê sem'belãn'. A federation of nine divisions, constituting a state in the Federated Malay States. See **FEDERATED MALAY STATES**.

NEJD, SULTANATE OF. See **ARABIA**.

NEON TUBES. See **ELECTRIC LIGHTING**.

NETHERLANDS, THE, or **HOLLAND**. A constitutional monarchy of Europe, bordering on the North Sea, which bounds it on the west and south; bounded on the east by Germany and on the south by Belgium. Capital, The Hague.

AREA AND POPULATION. On Jan. 1, 1927, the total area was 12,593 square miles, exclusive of water; population, according to the census of 1920, 6,865,314; according to the communal lists for Dec. 31, 1926, 7,526,606, density per square mile in 1926, 597.7. According to the figures for 1926, 46.36 per cent of the population, or 3,489,190, were inhabitants of towns of 20,000 or more, the remainder being classified as rural. In 1926 the movement of population was: Births, 177,459; deaths, 73,357; marriages, 55,299. The emigration, mostly to North America, was 3156 in 1926. The largest cities with their populations, Dec. 31, 1926 were: Amsterdam, 726,527; Rotterdam, 562,991; The Hague, 408,634; and Utrecht, 151,055.

EDUCATION. Elementary education is free and compulsory between the ages of 7 and 13, the cost being shared by the state and the communes. Public elementary schools in 1924-25, 3751, with 16,330 teachers and 500,768 pupils; private elementary schools numbered 3601, with 13,126 teachers and 577,184 pupils; public infant schools, 229, with 1001 teachers and 35,808 pupils; private infant schools, 1277, with 2887 teachers and 114,104 pupils. For higher education there are the four public universities at Leyden, Utrecht, Amsterdam, and Groningen, with totals of 389 members in the faculties and 6491 students. Besides, there are a technical university, a private university, navigation schools, commercial schools, schools for working people, etc.

PRODUCTION, ETC. Agriculture and animal husbandry in the Netherlands are highly intensive. There were 2,289,000 acres of arable land in 1926, or about 27 per cent of the total area; 3,129,000 acres of permanent meadow, and 583,000 acres of woods and forests. Most of the crops in 1927 were adversely affected by continuous wet weather during the summer. The area and production of the principal crops in 1927 were as follows: Wheat, 150,000 acres, 5,096,000 bushels; rye, 482,000 acres, 13,594,000 bushels; barley, 66,000 acres, 3,027,000 bushels; oats, 366,000 acres, 22,873,000 bushels; potatoes, 425,000 acres, 90,021,000 bushels; sugar beets, 171,000 acres, 1,852,000 metric tons; flax, 27,000 acres, 12,125,000 pounds of fibre. According to the livestock census of 1921, there were 2,063,000 cattle, 1,519,000 swine, 668,000 sheep, 272,000 goats, and 364,000 horses.

The Netherlands coal-mining industry, practically all of which lies in the Province of Limburg, is steadily gaining in importance, not only to the domestic market but also to the Euro-

pean, where it was of little account a few years ago. The net Limburg production in 1927 reached 9,323,012 tons, as compared with 320,000 in 1900, when there were only three coal-producing mines, all privately owned and operated. At that time the Government appointed a commission to decide whether it should take over part of the available coal area and to consider the conditions under which the remaining territory could be exploited by private companies. As a result, in 1901, the Government took about 40,000 acres, all then available except that part for which concessions already had been granted. The state mines gradually outstripped the private mines in production, as was indicated by the output of 3,492,000 tons for the privately owned mines in 1927 as compared with 5,831,110 tons from the state-owned mines.

In 1926 there were 309 distilleries, 10 sugar refineries, 18 beet-sugar refineries, 13 salt works, 213 breweries, and 3275 tobacco factories. Diamond cutting and shipbuilding are other important occupations. In 1926, 5194 vessels of all kinds were engaged in the fisheries. The value of the herring fishery was 10,407,138 guilders and that of fresh fish, 12,353,000 guilders. The oyster catch in the same year amounted to 1,365,760 kilos.

COMMERCE. Imports in 1927 were valued at \$1,022,346,000 and exports at \$761,974,000. The value of exports was 74.5 per cent of the import figure, the highest ratio since 1917. The large re-export trade is not included in either imports or exports. As compared with 1926, the dollar value of imports increased by 4.4 per cent and of exports by 8.7 per cent. The normal excess of imports is balanced by such invisible items as return on investments and earnings of shipping. There was a decided increase in imports of wheat, rye, and corn. Cotton goods increased heavily in quantity and were also considerably higher in value. Imports of flour and flour products were also greater. Total imports of chemical products, oil products, and lumber increased. There was a decline in imports of kerosene and fuel oil, but a sharp advance in imports of gasoline. Exports in most groups registered an increase with animal and vegetable products showing the largest advances, followed by vehicles and machinery, hides and skins, leather and shoes, oil, tar products, and textiles. There was a pronounced decline in exports of minerals, metals, and manufactures thereof.

FINANCES. A continuation of the financial prudence which had characterized recent Netherlands budgets was reflected in the proposals for 1929. Proposed expenditures under the ordinary service were placed at 593,651,000 florins, practically the same as those of the preceding year, while the receipts, estimated at 661,798,000 florins, were somewhat higher, despite tax reductions that became effective during 1928. Actual or anticipated receipts under the ordinary service since 1925 had been well in excess of expenditures. Under the extraordinary service, also known as capital service, proposed expenditures totaled 189,221,000 florins—a heavy decline as compared with those of 1928—and receipts were also lower at 44,152,000 florins. The budget provided, however, for the redemption and conversion of the 1923 "C" dollar loan amounting to 100,000,000 florins, the only foreign loan outstanding. Without this item the unfavorable balance for the capital service would be reduced

to 45,000,000 florins, and the net deficit for both the ordinary and capital services would reach approximately 37,000,000 florins.

The total public debt of the Netherlands on Sept. 1, 1928, stood at 2,813,127,000 florins, comprising a floating debt of 190,891,000 florins and a consolidated debt of 2,622,236,000 florins. The floating debt included principally treasury notes and bills totaling 115,511,000 florins; silver certificates, 11,508,000 florins; balance due the Netherlands Bank, 14,301,000 florins; and balance due the post and telegraph services, 34,805,000 florins. The treasury made but one public offering in 1928, consisting of 45,000,000 florins, in three and six months' bills issued October 1. As compared with the year previous, the statement of the consolidated debt on Sept. 1, 1928, showed a reduction of about 150,000,000 florins.

COMMUNICATIONS. In 1926, 28,852 vessels of 36,602,000 net registered tons entered the ports of the Netherlands and 29,017 vessels of 36,589,000 tons cleared.

Although operated by an organization known as the Netherlands Railways, the transportation system in the Netherlands is not entirely owned by the Government. The Netherlands Railways as the operating or management company has no capital structure. The Government, however, owns 22,000,000 florins of the Staatsspoor's capital of 40,000,000 florins and 27,500,000 florins of the Hollandsche Spoor's 50,000,000 florins capital—giving it a controlling interest in both companies. The combined balance sheet of the two companies for 1927 showed that the net profit amounted to 2,029,737 florins. The total number of passengers carried in 1927 rose to 52,286,352 from 48,132,326 in 1926. Freight carried totaled 20,360,693 metric tons—a gain of 373,754 tons over the previous year. At the end of 1927, the Netherlands Railways had about 40,000 pieces of rolling stock, 39,776 of which were in use on steam lines. Trunk-line and local-service locomotives numbered 1318, while 17 locomotives were in use on the tram lines. Passenger cars numbered 5155 and freight cars 31,402. The railways spent 16,340,685 florins in repairs to and upkeep of rolling stock in 1927. There are approximately 2255 miles of railway line in the country.

GOVERNMENT. Executive power is vested in the sovereign and legislative power conjointly in the sovereign and the Parliament, which is called the States-General and consists of two houses. The upper house is composed of 50 members, elected by the provinces, and the lower house of 100 deputies, elected directly. Ruling sovereign in 1928, Wilhelmina Helena Pauline Maria, born Aug. 31, 1880, succeeded to the throne on the death of her father, Willem III, Nov. 23, 1890, and crowned Sept. 6, 1898. The cabinet as appointed on March 8, 1926, was as follows: Premier and Minister of Finance, Dr. D. J. de Geer; Foreign Affairs, F. B. van Blokland (appointed Mar. 30, 1927); Interior and Agriculture, Dr. J. B. Kan; Justice, Dr. J. Donner; Colonies, Dr. J. C. Koningsberger; War, J. M. J. H. Lambooy; Public Works, Dr. H. van der Vegte; Marine, J. M. J. H. Lambooy (interim); Labor, Commerce, and Industry, Dr. J. R. S. de Bruijne; Instruction, Science, and Arts, Dr. M. A. M. Waszink.

HISTORY. The year passed very quietly in the Netherlands, no untoward incidents being reported in the press. The Government stated that

the uprisings in the Dutch East Indies had been suppressed completely and that it was doing everything in its power to attract the attention of the natives from the lure of Bolshevism to the benefits of nationalism.

NEVADA. POPULATION. According to the Fourteenth Census of the United States, the population of the State Jan. 1, 1920, was 77,407, and no subsequent estimate had been made. Capital, Carson City.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Hay	1928	368,000	733,000 ^a	\$8,309,000
	1927	368,000	638,000 ^a	6,092,000
Potatoes	1928	6,000	840,000	714,000
	1927	6,000	780,000	663,000
Wheat	1928	18,000	482,000	590,000
	1927	18,000	460,000	575,000

^a tons.

MINERAL PRODUCTION. The combined value of the gold, silver, copper, lead, and zinc mined in the State in 1927 was \$23,322,589, as against a corresponding total of \$24,549,991 for 1926. The combined total of ores treated was somewhat lower in 1927 than in 1926, and an increase in the mine production of copper, the most important of the five metals in point of production value, was more than offset by lower prices for this metal and by decreases in the mine production of the other four. Gold produced amounted to 150,346 fine ounces for 1927; for 1926, 175,382; silver, 5,397,179 fine ounces for 1927 and for 1926, 6,518,983; copper, to 120,259,276 pounds in 1927 and in 1926 to 101,827,937; lead, to 15,784,818 pounds for 1927 and 22,367,965 for 1926; zinc, to 6,344,523 pounds for 1927 and for 1926, 10,817,833. The minor part of the total mineral output of the State not covered by these metals was largely made up of the gypsum production, which was 350,972 short tons in 1926, and in 1925, 350,130; in value, \$1,527,235 in 1926 and in 1925, \$1,721,809. Tungsten ore was produced in a somewhat larger scale in 1926, the output having a value of \$356,700. The total value of the State's mineral products was \$27,613,232 for 1926; for 1925, \$26,469,901.

FINANCES. State expenditures in the year ending Dec. 31, 1927, as reported by the United States Department of Commerce, were: for maintenance and operation of departments, \$2,123,925 (of which \$449,664 was for local education); for interest on debt, \$72,102; for permanent improvements, \$1,634,662; total, \$3,830,599 (of which \$1,847,344 was for highways, \$402,723 being for maintenance and \$1,443,621 for construction). Revenues were \$4,062,117; of this, property and special taxes formed 33.8 per cent; departmental earnings, 6.5 per cent; licenses, including gasoline sale tax, 12.7 per cent. Assessed property valuation was \$203,070,872; State taxation thereon, \$1,229,171. The net State indebtedness on Dec. 31, 1927, amounted to \$1,650,376.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 2200.2. There were built in 1928, 1.18 miles of additional first track.

EDUCATION. Vocational courses received greater attention in 1928, and work was done on the preparation of a revised course of school study. There were, in the school year 1927-28, 16,596

enrolled public-school pupils, of whom 3292 were in high school. Teachers numbered 845. Their salaries averaged \$1532.

CHARITIES AND CORRECTIONS. Among the State agencies connected with the welfare institutions were the Board of State Prison Commissioners and the Commissioners for the Care of the Indigent Insane. The chief State institutions were the State Orphans' Home, Carson City; Nevada Hospital for Mental Diseases, Reno; Nevada State Prison, Carson City; School of Industry, Elko. The inmates of the State Prison on Jan. 1, 1928, numbered 190, and formed 245 to the 100,000 of the population. Patients in the State Hospital for Mental Diseases numbered 224.

LEGISLATION. A special session of the State legislature convened January 16 and adjourned February 4. Among other matters, it legislated to regulate State deposits in banks, to specify the duties of the State treasurer and State controller and with regard to the bonding of state officers and employees.

POLITICAL AND OTHER EVENTS. The increase of the number of divorces granted in the State, to 1953 in 1928, was attributed to the reduction of the residence requirement to three months. Plans to develop a deposit of silica sand for use in glass making on the Pacific coast were brought forward.

ELECTION. In the election of November 6 Hoover and Curtis, the Republican National candidates, obtained 18,327 votes, to 14,090 for Smith and Robinson, Democratic. United States Senator Key Pittman, Democrat, was reelected, as was also Representative-at-large S. S. Arentz, Republican.

OFFICERS. Governor, Fred B. Balzar; Lieutenant-Governor, Morley Griswold; Secretary of State, W. G. Greathouse; Treasurer, Ed Malley; Attorney-General, M. A. Diskin; State Comptroller, E. C. Peterson; Auditor, True Vencil; Superintendent of Public Instruction, Walter Anderson.

JUDICIARY. Supreme Court: Chief Justice, J. A. Sanders; Associate Justices, Ben W. Coleman and Edward A. Ducker.

NEVADA, UNIVERSITY OF. A coeducational, State institution of higher education at Reno, Nevada, founded in 1874. There was an enrollment of 849 students for the autumn term of 1928, of whom 508 were men and 341 were women. These were distributed among the various departments of the university as follows: Arts and sciences, 597; normal school, 37; engineering, 159; agriculture, 24; and home economics, 32. The summer session of 1928 had a registration of 117. There were 74 members on the faculty. The productive funds of the university amounted to \$358,439, and the income for the year to \$652,664. The library contained 48,934 volumes. President, Walter E. Clark, Ph.D., LL.D.

NEW BEDFORD, COTTON STRIKE. See STRIKES AND LOCKOUTS.

NEW BRUNSWICK (brūnz'wīk). One of the Maritime Provinces of Canada, lying east of Maine and south of the province of Quebec. Area, 27,985 square miles; population, according to the census of 1921, 387,876. The capital is Fredericton, with a population in 1921 of 8114. The largest cities with their populations in 1921 are St. John, 47,166 and Moncton, 17,488. The chief industries are agriculture, mining, manufactures, fishing, and lumbering. The acreage and yield of the principal crops for 1927 were as

follows: Wheat, 9871 acres, 157,000 bushels; oats, 203,536 acres, 5,841,000 bushels; barley, 6387 acres, 168,000 bushels; rye, 359 acres, 7000 bushels; mixed grain, 2822 acres, 73,000 bushels; other grains, 48,297 acres, 978,000 bushels; potatoes, 42,744 acres, 6,090,000 cwt.; roots, 12,235 acres, 2,589,000 cwt.; hay and clover, 559,019 acres, 813,000 tons; fodder corn, 3975 acres, 38,000 bushels. The livestock census in 1926 showed 53,159 horses; 116,530 milch cows; 107,932 other cattle; 156,616 sheep; 71,568 swine; and 854,621 poultry. The total value of the fisheries in 1927 was \$4,406,602. The province possesses various minerals including iron, gypsum, coal, building stone, antimony, copper, and manganese. The only active mining, however, is in coal and gypsum. The coal output in 1927 amounted to 171,777 short tons. In 1925-26 the exports from the province amounted to \$97,876,375 and the imports for consumption amounted to \$26,904,574. In the same year there were 1941 miles of railways open for operation. The province is under a lieutenant-governor appointed by the governor-general of Canada, and a legislative assembly of 48 members elected for five years. As a result of the election held in August 1925, the political grouping in the assembly was as follows: Conservatives, 35; Liberals, 12; Independent, 1. Lieutenant-Governor in 1928, W. F. Todd; Prime Minister and Attorney-General, J. B. M. Baxter; Secretary-Treasurer, A. J. Leger; Agriculture, Lewis Smith; Public Health and Labor, Dr. H. I. Taylor; President of the Executive Council, L. P. D. Tilley; Lands and Mines, C. D. Richards; Public Works, D. A. Stewart; Minister without Portfolio, E. A. Reilly. The province is represented by 10 members in the Canadian Senate and 11 in the House of Commons.

NEW CALEDONIA, käl'é-dō'n'yā. A French colony, comprising the island of New Caledonia, the southernmost of the Melanesian Islands, lying between 20° 1' and 22° 26' S. latitude and 161° 30' and 144° 40' E. longitude; and the following dependencies: Isle of Pines, Wallis Archipelago, Loyalty Islands, Huon Islands, and Futuna and Alofi. The island of New Caledonia has a length greater than 248 miles and an average width of 31 miles. Area, 7650 square miles. Population, according to the census of 1921, 47,505, of whom 14,172 were free, 2310 of convict origin, and 25,123 Melanesians and Polynesians. Capital, Nouméa, with 9336 inhabitants in 1921. No convicts have been sent to the penal settlements on Nou Island since 1896. Coffee, copra, cotton, manioc, corn, bananas, tobacco, and pineapples form the principal agricultural products. The mineral resources are said to be very rich and varied, comprising cobalt, chrome, nickel, iron, manganese, all of which are abundant; also antimony, mercury, silver, gold, lead, copper, and cinnabar. In 1925 the value of mineral exports was 4,019,334 francs. The other leading exports include coffee, copper, copra, guano, and preserved meats. The chief imports are wine, coal, flour, and rice. In 1926, 123 vessels of 176,749 tons entered and 123 of 174,008 tons cleared the ports of New Caledonia. Imports in 1926 amounted to 141,746,983 francs and the exports, 90,652,759 francs. About two-thirds of those that entered were French. There is a narrow-gauge railway from Nouméa to Paita, about 20 miles long; an extension to Bourail, a distance of 105 miles, has been proposed for some time. The

colony is administered by a governor assisted by a privy council, made up of officials, and by an elected council-general. Governor in 1927, M. Guyon, appointed in 1925.

NEWCASTLE, SEVENTH DUKE OF (HENRY PELHAM ARCHIBALD DOUGLAS PELHAM-CLINTON). English peer, died at London May 30. He was born at London, Sept. 28, 1864, and succeeded his father in 1879. He was educated at Eton and at Magdalen College, Oxford. He was not robust and took no part in public life but devoted himself to study, traveling, and to support of the Anglo-Catholic party in the Church of England, of which he was one of the foremost leaders. He was also interested deeply in the life, history, and customs of the gypsies. He was a member of the London School Board, 1894-97, and a fellow the Royal Colonial Institute. By inheritance he was lord high steward of Retford, master forster of Dartmoor, and keeper of St. Briavel's Castle. He was much attached to America and visited the United States nearly twenty times. He was succeeded in his hereditary honors by his brother, Lord Henry Francis Pelham-Clinton Hope, who was known in America as the former husband of May Yohe, actress, and as former possessor of the famous Hope diamond.

NEW ENGLAND FLOODS. See FLOODS.

NEWFOUNDLAND, nü'fūnd-länd'. An island possession of Great Britain in the north-eastern part of the Gulf of St. Lawrence. Area, 42,734 square miles; population, according to the census of 1921, 259,358, estimated in 1926, 262,177. Dependent upon Newfoundland is the populated strip of Labrador, with an area of 120,000 square miles and a population in 1926 of 3977. Capital, St. John's, with a population in 1926 of 40,059. Other towns and their populations in 1921 were Bonavista, 4025; Harbor Grace, 3825; Carbonear, 3320. The birth rate in 1926 was 27.44 per thousand and the death rate 13.60 per thousand. The immigrants in the same year numbered 12,505 and the emigrants, 15,323. There were 1139 schools of all kinds in 1926 with a total attendance of 59,088.

The value of exports from the island in 1926-27 amounted to \$30,050,000 and the value of imports \$25,814,000. The outstanding feature of the import trade in the fiscal year ended June 30, 1927, was the decline in the share enjoyed by Great Britain. Imports from Canada and the United States remained at about the previous level. Exports during the year increased about one-fifth. Products of the fisheries constituted half of the total, but pulp and paper exports accounted for all the increase. In 1925-26 the revenue was \$9,752,521 and the expenditure \$9,865,167. For the fiscal year ending June 30, 1927, government revenue was much below expenditure. It appeared from available data that the budgetary situation eased somewhat in the later months of 1927 because of a heavier revenue from increased imports. The Government floated a \$5,000,000 loan during the year and the funded public debt reached a total of \$77,000,000; on June 30, 1926, it was \$67,018,000.

In 1927 there were 974 miles of railway line, of which 905 belonged to the Government. The railway system was reported to have carried in 1927 the largest number of passengers and the greatest amount of freight since it was taken over by the Government in 1924. The Government also operates 12 steamers. In 1926 there were 864 post offices, 7500 miles of telegraph wire, 12,000 miles

of telephone wire, and 6000 telephone instruments. The gross receipts of post and telegraphs were \$525,000 for the year 1926-27.

Executive power is vested in a governor, assisted by an executive council of not more than 10 members, and legislative power is vested in a council of not more than 24 members and an elected house of representatives of 40 members. Women have the franchise. Governor and Commander-in-Chief in 1928, Sir William L. Alardyce. In the elections held late in October, 1928, Sir Richard Squires, the leader of the Liberal party, was returned to power with a large majority in the House of Representatives. Sir Richard served as Prime Minister from 1919 to 1924.

NEW GUINEA, gín'ē. An island of the East Indies, the third largest in the world, ranking after Australia and Greenland. Area, variously estimated at from 310,000 to 335,000 square miles; population estimated to be slightly below 1,000,000. It is divided under Australian, Dutch, and British control, the distribution being as follows: The northeastern portion, constituting the former Kaiser Wilhelmsland, to Australia; the western part, to 140° E. longitude, to the Dutch East Indies; the southeastern part is the British colony of Papua. See DUTCH EAST INDIES, GERMAN NEW GUINEA, and PAPUA.

NEW HAMPSHIRE. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 443,083. The estimated population on July 1, 1928 was 456,000. The capital is Concord.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Hay	1928	475,000	665,000	\$9,281,000
	1927	480,000	605,000	9,774,000
Potatoes	1928	12,000	1,856,000	1,325,000
	1927	12,000	1,800,000	2,520,000
Corn	1928	14,000	560,000	672,000
	1927	15,000	615,000	646,000

^a tons.

MINERAL PRODUCTION. Stone production was higher in 1926, the latest recorded year, and made up nearly half of the mineral total of the State. There were quarried 148,250 short tons of stone in 1926; in 1925, 130,120. The value of stone quarried in 1926 totaled \$1,908,284; of that quarried in 1925, \$1,712,138. Clay products reached a total value of \$881,997 for 1926, and of \$828,541 for 1925. The mica product of 1926 attained the value of \$274,103. Besides sand and gravel production, that of feldspar was also in considerable amount. The total value of the State's mineral production in 1926 was \$4,144,645; in 1925, \$3,464,837.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$5,907,726 (of which \$593,170 was aid to local education); for interest on debt, \$74,215; for permanent improvements, \$1,826,294; total, \$7,808,235 (of which \$2,863,302 was for highways, \$1,515,964 being for maintenance, and \$1,347,338 for construction). Revenues were \$7,783,195. Of this, property and special taxes formed 41.1 per cent, departmental earnings and charges for officials' services 9.3 per cent, and sales of licenses and taxation of gasoline, 38.5 per cent. Property val-

uation was \$663,865,495; State taxation thereon, \$3,036,018. State net funded debt on June 30, 1928, was \$1,817,720.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 1198.10. No additional construction was reported in 1928.

EDUCATION. A four-year programme of education was completely established at each of the two State Normal schools. The school-age population of the State (aged from 5 to 16 years) for 1927-28 was given as 90,616. There were enrolled in the public schools in that academic year 75,399 pupils. Of these, 62,410 were in elementary and 12,989 in high schools. Expenditures of the year for public-school education totaled \$7,561,337.39. Salaries of teachers averaged: for men, high school, \$2139.59, elementary, \$1539.57; for women, high school, \$1422.60, elementary, \$1132.09.

CHARITIES AND CORRECTIONS. The State Board of Charities and Correction as constituted by act of 1926 was the chief central welfare agency. It had various powers and duties, particularly toward children and the deaf, the dumb, and the blind. The chief State institutions were: State Hospital (insane), Concord, 1645 patients on June 30, 1928; Laconia State School (Feeble-Minded), 437; State Industrial School, Manchester, 196; State Prison, Concord, 129; Soldiers' Home, Tilton; State Sanatorium (tuberculosis), Glenciff 95. The U. S. Department of Commerce reported in regard to mental patients in State hospitals there were 1575 on Jan. 1, 1928, or 346.2 per 100,000 of population. In the year 1927 there were 307 first admissions, or 67.5 per 100,000 of population.

POLITICAL AND OTHER EVENTS. Dartmouth College carried out an extensive building programme, which included the Baker Library, a natural science hall, and a dormitory; it undertook also the construction of a fine arts building to be named after Frank P. Carpenter of Manchester, the donor; of Sanborn House, a donated building for the English department; and of two dormitories. The State of New Hampshire made its first bond issue subsequent to 1919; the amount, \$586,000, was for hospital, school, armory, and general improvement purposes. The discovery of a dike of feldspar of a type economically valuable for fluxing purposes, situated near Alstead, was reported by Professor C. E. Locke; the new deposit was described as situated near one that had been worked for a number of years.

ELECTION. In the election of November 8, was cast much the largest vote to that time recorded in New Hampshire. For President and Vice President, Hoover and Curtis led with 115,404 votes, to 80,715 for Smith and Robinson. The two United States Representatives, both Republican, were reelected. C. W. Tobey, Republican, was elected governor, and four of the five elected councilors were Republican.

OFFICERS. Governor, Huntley N. Spaulding; Secretary of State, Hobart Pillsbury; State Treasurer, Henry E. Chamberlin; Attorney-General, Jeremy R. Waldron; Commissioner of Education, Ernest W. Butterfield.

JUDICIARY. Supreme Court: Chief Justice, Robert J. Peaslee; Associate Justices, John E. Allen, Thomas L. Marble, Oliver W. Branch, Leslie P. Snow.

NEW HAMPSHIRE, UNIVERSITY OF. A co-educational, State institution of higher learning

at Durham, N. H., founded in 1866 at Hanover, N. H., as a part of Dartmouth College, transferred to Durham as State College in 1893, and made the State University in 1923. It consists of a college of liberal arts, a college of agriculture, and a college of technology. The 1928-29 enrollment was 1523, of whom 1099 were men and 424, women. The summer session had a registration of 348 students. The faculty numbered 148. The endowment amounted to \$1,030,000, and the income for the year totaled \$1,452,322. The college year 1925-26 was the first under the millage law of 1925, which provides an annual amount equal to one mill for each dollar for the assessed valuation of the State. This fund, which in 1927-28 amounted to \$656,524, together with income from other sources, was sufficient for the maintenance of the institution and for the gradual construction of a complete physical plant in accordance with a comprehensive plan for the development of the university. In 1928 a \$200,000 power plant was completed. The library contained 63,000 volumes. President, Edward Morgan Lewis, LL.D., Litt.D.

NEW HEBRIDES, *heh'ri-dez*. A group of islands in Melanesia, including the following islands: Espiritu Santo, Mallicolo, Efate or Sandwich Island, Epi, Erromanga, Tanna, Fotuna or Eironnian, and Aneityum. The group is under the joint administration of France and Great Britain, according to conventions of February, 1906, and Mar. 18, 1922. The interests of British, French, and natives are guaranteed; the conditions of land holding in the islands are fixed; and the regulation and recruitment of labor provided for. The area is approximately 5700 square miles and the population about 60,000, of whom in 1926, 211 were British and 680 French. Many missionary schools have been established, chiefly by the Presbyterian faith. The land for the most part has not been cleared, but large tracts have been settled in the interior. The area under cultivation is planted chiefly with coconuts, cocoa, cotton, and coffee. Bananas, oranges, and all tropical fruits grow well. Trade is chiefly with Sydney and New Caledonia. The imports in 1926 amounted to 30,457,405 francs and the exports were valued at 43,267,835 francs, of which about one-fourth were British. The chief imports are provisions, clothing, metals, and furniture, and the chief exports are corn, copra, coffee, cotton, coconuts, and cacao. The joint revenue in 1926 was 1,777,199 francs and expenditure 1,217,559 francs. British revenue in 1926 amounted to £825 and expenditure to £15,661. Direct steamship communication has been established with France, via Tahiti and Panama. British High Commissioner, M. Eyre Hutson; French High Commissioner, M. Guyon; British Resident Commissioner, G. A. Joy (acting); French Resident Commissioner, M. d'Arbussier.

NEW JERSEY. **POPULATION**. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 3,155,900. The estimated population on July 1, 1928, was 3,821,000. The capital is Trenton.

AGRICULTURE. The accompanying table gives the acreage, production, and value of the principal crops in 1927 and 1928.

MINERAL PRODUCTION. The output of clay products, which forms more than half of the yearly total of the State's mineral production was higher in 1926, the latest recorded year, than 1925. The total value of such products was

AGRICULTURE—ACREAGE AND PRODUCTION

Crop	Year	Acreage	Prod. bu.	Value
Potatoes	1928	57,000	9,120,000	\$4,560,000
	1927	57,000	9,177,000	10,095,000
Hay	1928	263,000	479,000 *	6,926,000
	1927	274,000	487,000 *	8,398,000
Corn	1928	181,000	6,968,000	6,759,000
	1927	179,000	7,160,000	6,086,000
Peaches	1928	.....	1,625,000	2,194,000
	1927	.....	2,304,000	3,456,000
Sweet potatoes	1928	15,000	2,175,000	2,610,000
	1927	15,000	1,890,000	2,268,000
Wheat	1928	60,000	1,200,000	1,488,000
	1927	60,000	1,380,000	1,725,000

* tons.

\$47,512,514 for 1926 and \$46,010,624 for 1925. Of these totals, brick and tile contributed \$23,046,186 in 1926 and \$21,610,853 in 1925; pottery, \$24,466,328 in 1926 as against \$24,399,771 in 1925. Zinc ranked second of the State's minerals in point of value of yearly product. The total of zinc produced in 1926 was 80,629 short tons. The mining of iron ore, though not any longer one of the State's leading mineral industries, made some advance in 1926, when 212,152 long tons of ore were shipped from mines, and this advance was for the most part maintained in 1927, when 202,720 tons were shipped. The value of the shipments of the latter year was \$860,393; that of the 1926 shipments, \$925,403. The total value of the mineral products for 1926 was \$77,065,713; for 1925, \$76,761,313.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of State governmental departments, \$44,053,408 (of which \$16,896,733 was aid to local education); for conducting public service enterprises, \$156,160; for interest on debt, \$3,071,760; for permanent improvements, \$24,709,156; total, \$71,990,484 (of which \$21,868,567 was for highways, \$6,100,970 being for maintenance and \$15,767,597 for construction). Revenues were \$76,045,226. Of this, property and special taxes formed 65.4 per cent; departmental earnings and charges for officials' services, 5.5; sales of licenses, 19.7. The State at the time levied no sales tax on gasoline. Property valuation was \$6,111,703,758; State taxation thereon, \$36,545,466. Net funded State debt on June 30, 1927, was \$63,274,551. Outstanding State highway debt was \$29,000,000.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 2294.27. There were built in 1928, 3.1 miles of additional first track, 1.41 miles of second track, 12.16 miles of third, and 10.68 of fourth, or other track.

EDUCATION. There was a general movement toward inserting programmes of health education in new curricula in the entire State. In connection with this movement, as related in the *Journal of the National Education Association*, was the appointment of a State director of health education. There were enrolled in the public schools of the State in the academic year 1927-28, 772,022 pupils. The number of teachers was 26,414; of school buildings, 2300. Of the pupils, 54,700 were transported to schools at public expense. Of the pupils, 18,269 were enrolled in evening schools; 45,954 in kindergartens; in elementary day schools, 601,043; in day high schools, 100,045. Current expenses of the year for public schools totaled \$68,575,728.80. Salaries

of day school-teachers, superintendents excluded, averaged \$1931.11 a year.

CHARITIES AND CORRECTIONS. The central authority for the care of dependents, defectives, and delinquents of the State rested in 1928 in the Department of Institutions and Agencies. This body, created in 1918, consists of the governor, ex-officio, and eight appointed non-salaried members. It coördinates activities, prepares budgets, lays down general policies, furnishes expert staff services to individual institutions, and has authority to inspect municipal and county institutions. It appoints a commissioner as its chief executive officer. State institutions for the care or custody of individuals, with the numbers of their inmates on December 1, 1928, were Grey-stone Park State Hospital (insane), 3600; Trenton State Hospital (insane), 2503; State Colony for Feeble-Minded Males, New Lisbon, 343; State Colony for Feeble-Minded Males, Woodbine, 333; State Institution for Feeble-Minded (females), Vineland, 1060; North Jersey Training School (female defectives), Totowa, 301; State Village for Epileptics, Skillman, 976; Sanatorium for Tuberculous Diseases, Glen Garden, 301; State Prison, Trenton, 1685; New Jersey Reformatory (males), Rahway, 601; New Jersey Reformatory (males), Annandale, 201; New Jersey Reformatory (women), Clinton, 176; State Home for boys (delinquents), Jamesburg, 592; State Home for Girls (delinquent), Trenton, 238; Home for Disabled Soldiers, Kearney, 107; Home for Disabled Soldiers, Sailors, Marines, and their Wives and Widows, Vineland, 210.

LEGISLATION. The 152nd State legislature convened January 10 and held session until early in April. After a recess of about three months, it reconvened July 10, and the session was thereafter protracted until after election because of the political situation in the State. In the first session was enacted a measure (repealed later owing to strong opposition) to authorize the construction and operation of a privately owned toll road between Camden and Atlantic City, a route largely utilized by motor traffic originating in Pennsylvania. Maximum compensation for injured workmen under the State compensation system was increased by statute to \$20 a week. Banks and trust companies received the right to refuse payment on any check presented a year or more after date. A law was passed permitting summary proceedings for an employer's failing to pay wages and providing money penalties for the offense. An existing act giving motor buses the right of way on highways was repealed. A series of bills embodying recommendations of the commission for uniform traffic laws were passed, but were vetoed by Governor Moore chiefly as giving too much leeway in regard to speed limits. In the resumed session, however, the measures were passed with amendments and were signed by the governor. They set maximum highway speeds at 10 miles an hour in school zones, 15 miles an hour in taking corners, and 40 miles an hour on country roads, but authority remained with municipalities to regulate speeds within their own areas. Pedestrians were forbidden to cross streets at oblique angles.

The proposal contained in Governor Moore's message at the convening of the legislature, that it repeal the State Prohibition Enforcement Act, was not carried out. The State Senate, early in the session, voted in favor of an investigation

of the banking department. The investigation was largely occupied with allegations of political favoritism in the granting of banking charters. A resolution of both houses provided for the creation of a committee of eight to investigate questions of public interest affecting any State department, board, or commission. There followed an inquiry into voting practices in Hudson County, a Democratic area of which the vote had vitally affected the results of several State elections. Upon disclosures in the course of this inquiry, the legislature in its resumed session passed a measure to remove Thomas A. McDonald, Superintendent of the Hudson County election bureau, and to name his successor. Vetoed by Governor Moore, this measure was repassed over his veto. The reasons advanced for the removal were discoveries of numerous improper registrations and evidence to the effect that Democrats had voted Republican ballots in primary elections.

The legislature, through the Case committee, extended its investigation into the affairs of Hudson County, and about a week before election day the committee summoned Mayor Frank Hague of Hudson to testify before it. This he refused to do, alleging that the purpose of the proceedings was to affect the vote in the State. After the election an attempt was made to arrest Hague in his home on a charge of contempt. He agreed to surrender himself on this charge, and later defeated the contempt charge in the Chancery court.

POLITICAL AND OTHER EVENTS. The Wanaque Reservoir of the North Jersey District Water Commission, to serve eight cities of the northern part of the State was completed and partly filled early in the year. Work on it had begun in the autumn of 1918. Impounding the waters of the Wanaque River by a dam 1500 feet long, it had a capacity of 29,000,000,000 gallons and cost about \$29,000,000. Contracts were negotiated between the Pennsylvania Railroad and the city of Newark for the construction of a railroad and tube system terminal to cost about \$25,000,000. The Lackawanna system announced in April its intention to proceed with the work of electrifying the Morris and Essex line to Dover and branches to Gladstone and to Montclair, at a cost of \$14,000,000. Efforts to establish a motor-bus line between Camden and Atlantic City were opposed before the public utilities commission by railroad interests. Efforts to enforce Sunday closing of moving picture houses in Milburn and Westwood early in the year led to threats of reprisals in the form of action to close other forms of business, such as garages, drug stores, and gasoline filling stations. To check the growth of the Japanese beetle pest in rural New Jersey, a shipment of India wasps was imported from Calcutta. It was the theory that these wasps were natural parasites on the beetle grub, in which they laid their eggs.

Following the removal of the superintendent of elections in Hudson County (see *Legislation*, above) a new superintendent appointed by the legislature proceeded to a purgation of the registration lists, from which more than 20,000 names were removed. Many of these were restored in the last few days before the election, by action of the local courts.

ELECTION. The voters of the State, on November 6, gave a heavy majority for the Republican presidential and vice presidential candidates,

Hoover and Curtis, in what was much the largest total vote that the State had ever cast. Hoover carried every county except Hudson, where Smith on the presidential vote obtained a majority of about 50,000. Senator Edward I. Edwards, Democrat, running for reelection, was defeated by Hamilton F. Kean, Republican. A prevailing Republican group of United States Representatives was likewise elected. For the first time in 11 years a Republican governor was elected, in Morgan F. Larson, who defeated William L. Dill, Democratic. The popular vote for president was: Hoover (Rep.), 925,796; Smith (Dem.), 616,517.

OFFICERS. Governor, A. Harry Moore; Secretary of State, Joseph F. S. Fitzpatrick; Treasurer, Albert C. Middleton; Comptroller, Newton A. K. Bugbee; Attorney-General, Edward L. Katzenbach; Commissioner of Education, Charles H. Elliott.

JUDICIARY. Chancellor, Edwin Robert Walker; Supreme Court: Chief Justice, William S. Gummore; Justices: Samuel Kalisch, Frank S. Katzenbach, Jr., Thomas W. Trenchard, Charles W. Parker, Charles C. Black, James F. Minturn, Luther A. Campbell, Frank T. Lloyd.

NEW JERUSALEM, CHURCH OF THE. An organization which is also known as the New Church, and popularly called Swedenborgian, because based upon the statement of Christianity set forth in the writings of Emanuel Swedenborg, Swedish scientist, philosopher, theologian, and seer (1688-1772). The two bodies that now compose it in the United States are the General Church of the New Jerusalem and the General Convention of the New Jerusalem, while in Great Britain the General Conference of the New Church corresponds to the General Convention in the United States. The first New Church society in America was founded at Baltimore in 1792, and the General Convention of the New Jerusalem in the United States was organized in 1817. In 1890 a considerable number withdrew, forming later the General Church of the New Jerusalem. The polity of the church is modified episcopacy; the worship in the church is generally liturgical, chants being extensively used. Missionary work is carried on in Denmark, Sweden, Germany, France, Switzerland, Lettland, Czechoslovakia, Austria, South Africa, India, Japan, British Guiana, and Dutch Guiana.

THE GENERAL CHURCH OF THE NEW JERUSALEM. This body was organized in 1897 under episcopal government with headquarters at Bryn Athyn, Pa., a new community where the church established the following institutions: A cathedral church of unusual architectural interests, built in the manner of the great cathedrals of the fourteenth century; the Academy of the New Church, which has a valuable museum and library and departments from kindergarten to junior college; and theological and normal schools; with an enrollment of 267 in 1928. The General Church differs from the older bodies in the New Church mainly in its stricter attitude toward the theological writings of Swedenborg (considering them to be the Gospel or Word of the Lord at his Second Advent) and in the endeavor to establish parochial schools. It had an international membership in 1928 of 1933 with 3 bishops, 35 pastors, 5 ministers, and 24 societies, 15 of which were in the United States and Canada, 2 in England, and others in Sweden,

Holland, Belgium, France, Natal, New South Wales, and Brazil. A native mission was carried on in South Africa, with headquarters at Alpha, O.F.S. The north wing of the Cathedral at Bryn Athyn was used for the first time at the children's Christmas service on December 23. Among the periodicals published by the General Church were *New Church Life*, its official monthly magazine, *New Church Sermons*, *The Journal of Education*, and *The Bulletin*.

THE GENERAL CONVENTION OF THE NEW JERUSALEM IN THE UNITED STATES OF AMERICA. In 1928, the General Convention consisted of about 5700 communicant members, united into 85 societies, territorially organized as 12 associations and 7 societies. The ministerial membership was 115; and the amount expended for missions and benevolences for the year ending Apr. 30, 1928, was \$22,000. Educational institutions of the General Convention included a theological school at Cambridge, Mass., a junior college at Urbana, Ohio, and the Waltham School for Girls, Waltham, Mass. Periodicals included: the *New-Church Messenger*, weekly, Brooklyn, N. Y.; the *New-Church Review*, quarterly, Boston, Mass.; the *New-Church League Journal*, monthly, Boston, Mass.; *The Helper*, weekly, Philadelphia, Pa.; and *Sunday Afternoons*, weekly, Boston, Mass. The Convention held its 1928 meeting at its national church in Washington, D. C., in May. Helen Keller, a member of this body, was the principal speaker. The 1929 Convention was to be held in New York City.

THE GENERAL CONFERENCE OF THE NEW CHURCH. This body which is organized in Great Britain and corresponds to the General Convention in the United States, is the largest organization of the New Church, its 70 societies reporting an adult membership of 6295, together with 656 "isolated receivers," 1053 junior members, and 5775 Sunday school attendants, in 1928. The Conference meets annually, the president holding office for one year. Its principal publications are *New Church Magazine* (quarterly) and *New Church Herald* (weekly). Publication societies are The Swedenborg Society (London, founded, 1810), Missionary and Tract Society, and Manchester New Church Publishing Society. A number of isolated congregations, especially within the British Empire, are affiliated with the General Conference. Its South African Native Mission, with headquarters at Krugersdorp, reported 2639 adult members.

NEW MEXICO. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 360,350. The estimated population on July 1, 1928, was 396,000. The capital is Santa Fe.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Cotton	1928	108,000	90,000 ^a	\$6,825,000
	1927	95,000	70,000 ^a	6,980,000
Hay	1928	219,000	437,000 ^b	7,268,000
	1927	226,000	464,000 ^b	6,158,000
Beans, dry	1928	214,000	856,000	2,696,000
	1927	195,000	975,000	2,828,000
Corn	1928	199,000	3,482,000	3,099,000
	1927	166,000	2,490,000	2,316,000
Wheat	1928	186,000	2,054,000	2,201,000
	1927	55,000	570,000	676,000
Sorghum, grain	1928	188,000	3,884,000	2,030,000
	1927	171,000	2,894,000	1,915,000

^a bales, ^b tons.

MINERAL PRODUCTION. The mine output of copper in the form of recoverable content of ores contributes normally about 40 per cent of the combined value of all minerals produced. In 1927 the mines produced but 74,251,863 pounds of copper, as against 81,642,379 in 1926; the price being lower in 1927, the total value of copper for that year was \$9,726,994, as compared with \$11,429,933 for 1926. Gold production was to the value of \$604,838 in 1927 and \$405,803 in 1926. There were mined 890,083 fine ounces of silver in 1927, a considerable advance over the 450,934 ounces of 1926; the total value for 1927 was \$504,677; for 1926, \$281,383. The lead output also was much greater, being 16,052,855 pounds for 1927, as against 6,960,366 for 1926; in value, \$1,011,330 for 1927 and for 1926, \$556,829. Zinc production more than doubled, 59,603,000 pounds for 1927, from 24,104,800 for 1926; in value, \$3,814,592 for 1927 and \$1,807,860 for 1926. Thus the combined value of the year's production of the five metals, gold, silver, copper, lead, and zinc, in 1927 was \$15,662,076, and well in excess of the \$14,841,808 of 1926. Of coal, the mine output was slightly increased, being 2,935,539 net tons for 1927, as against 2,817,923 for 1926; the totals were valued at \$9,179,000 for 1927 and \$8,916,000 for 1926.

The estimated 1928 production of metals was: gold, 31,546 ounces; silver, 822,478 ounces; lead, 14,462,000 pounds; copper, 88,214,000 pounds; zinc, 65,658,000 pounds. These quantities were valued respectively as follows: gold, \$652,114; silver, \$481,150; lead, \$882,182; copper, \$12,879,244; zinc, \$3,939,480. The combined value for all five metals was \$18,834,170.

Petroleum production fell to 1,203,000 barrels (1927) from 1,666,000 barrels (1926); in value, \$1,600,000 (1927, estimated) and \$3,720,000 (1926). The total value of the State's mineral products for 1926 was \$28,513,991; for 1926, \$25,696,009.

FINANCE. State expenditures in the year ended June 30, 1927, according to the U. S. Department of Commerce, were: for maintenance and operation of State governmental departments, \$4,917,254 (of which \$1,115,808 was aid to local education); for interest on debt, \$176,495; for permanent improvements, \$3,052,077; total, \$8,146,096 (of which \$3,946,731 was for highways, \$996,097 being for maintenance and \$2,950,634 for construction). Revenues were \$6,998,951. Of this, property and special taxes formed 27.6 per cent; departmental earnings and charges for State officials' services, 12.7 per cent; sales of licenses and taxation of gasoline, 21.5 per cent. Property valuation was \$315,373,405; State taxation thereon, \$2,623,523. Net funded State debt on June 30, 1927, was \$3,321,279. Highway bonds totaling \$2,670,000 were outstanding.

TRANSPORTATION. The total number of miles of railroad line under operation in the State on Jan. 1, 1928, was 2997.59. No construction of additional mileage was reported in 1928.

EDUCATION. A plan was brought forward with support of both political parties to reorganize the State Department of Education in such fashion as to place the power to appoint the State Superintendent in the hands of the Board of Education, and to provide more systematic management of State school lands and State school funds.

CHARITIES AND CORRECTIONS. The first building unit of a home for mental defectives, at Las

Lunas, was constructed in 1928, under a State appropriation; the institution was under the authority of a statutory board of managers, and was expected to begin operation about Jan. 1, 1929. The chief central authority of the State in the welfare field in 1928 was the Department of Public Welfare, which included a Bureau of Public Health and a Bureau of Child Welfare. Outside of the work usual to a health organization, it was active in the placement of dependent, delinquent, and defective children. It did not control the State institutions. The chief of these were: School for the Deaf, Santa Fe; Institute for the Blind, Alamogordo; New Mexico Insane Asylum, Las Vegas; Reform School, Springer; State Penitentiary, Santa Fe; State Miners' Hospital, Raton; Home and Training School for Mental Defectives (see above).

POLITICAL AND OTHER EVENTS. The State was involved in the controversy over the Boulder Dam project, State Water Commissioner Wilson issuing an appeal in March to Representatives from the States in the river basin to oppose the dam. At the Federal Trade Commission's inquiry into the activities of public utility interests, it was asserted in testimony that ex-governor Mecham's law firm had been under retainer from an association of utility interests while he attended the interstate conferences at Denver in 1927. The ranch of Albert B. Fall, ex-Secretary of the Interior, near Three Rivers, described as the largest one-unit ranch in the country, was reported sold in July to Texas cattle interests. Excavations in an area near the headwaters of the Cimarron River, conducted by Barnum Brown of the American Museum of Natural History, brought to light remains of bison of an extinct type and spearheads unlike those of known American Indians, in a situation indicating an antiquity of some 20,000 years. Loss of pasturage attributed to the prevalence of jack rabbits led to active efforts to slaughter these creatures in the spring.

ELECTION. The vote of the State in the election of November 6 went to Hoover and Curtis on the Republican National ticket; they received 69,617 votes, to 48,094 for Smith and Robinson, Democratic candidates. Bronson Cutting, Republican, United States Senator by appointment, was elected for the full regular term. O. A. Larrazolo, Republican, was elected to the Senate for the unexpired term. Richard C. Dillon, Republican, was reelected Governor. John Morrow, Democrat, was reelected United States Representative-at-large.

OFFICERS. Governor, R. C. Dillon; Lieutenant-Governor, Edward Sargent; Secretary of State, Jennie M. Fortune; State Auditor, Miguel A. Otero; State Treasurer, Warren R. Graham; Attorney-General, Robert C. Dow; Superintendent of Public Instruction, Lois Randolph.

JUDICIARY. Supreme Court: Chief Justice, Frank W. Parker; Associate Justices, C. M. Botts, Samuel Bratton, John C. Watson.

NEW ORLEANS. See LOUISIANA.

NEW SOUTH WALES. One of the six original States of the Commonwealth of Australia; located in the southeast part of the continent; bounded on the north by Queensland; on the south by Victoria; on the east by the Pacific Ocean; and on the west by South Australia. Area, inclusive of the Federal Territory, 310,372 square miles; population, including aborigines, according to the census of 1921, 2,101,968. The Federal Territory in 1921 had an area of

912 square miles and 2572 inhabitants. Sydney, the capital, had a population in 1921 of 905,047, including suburbs and shipping. At the end of 1927 the population was estimated at 2,360,326, for all of New South Wales, and 1,039,390 for Sydney. Other towns with their population at the end of 1926 were: Newcastle and suburbs, 99,850; Broken Hill, 24,010; Auburn, 17,710; Parramatta, 16,400; Granville, 16,800; Bankstown, 17,270; and Lithgow, 16,380. The movement of population in 1926 was: Births, 53,126; deaths, 22,188; marriages, 19,219. During the same year the immigrants numbered 62,395 and the emigrants, 43,575. Education is controlled by the State and instruction is compulsory between the ages of 7 and 14. At the beginning of 1927 there were 3179 government schools, with 11,313 teachers, with 343,187 pupils enrolled, and an average attendance of 271,690. There were 702 private schools, of which 482 were Roman Catholic, with an enrollment of 2795 teachers and 67,537 pupils.

Wheat is the principal agricultural crop and the chief fruit crop is oranges. The area sown for wheat during the 1926-27 season was 3,649,730 acres. Other grains and other citrus fruits, potatoes, tobacco, bananas, and apples are raised. The production of wool in 1926-27 amounted to 495,820,000 pounds and the wool clip was valued at £35,237,000. On June 30, 1926, the state had 53,860,000 sheep, 2,937,130 cattle, 651,035 horses, and 382,674 swine. The estimated value of the forestry products in the fiscal year 1925-1926 was £1,871,000. A total of 11,413 factories employing 145,958 persons was reported in New South Wales for the year ended Dec. 31, 1927, representing a decrease of 416 factories and 2664 employees. Manufacturers of clothing and textile fabrics employed the greatest number of persons during the year, followed by metal-working and machinery establishments. No new industry was reported, but there were many extensions of existing plants. The rapid growth of the motor trade resulted in the erection of many modern buildings.

The annual value of the minerals produced in New South Wales is more than twice that assigned to the combined output of all the other States of the Commonwealth. The principal factors are coal, coke, silver, lead, zinc, and limestone cement. The output of coal in 1927 was 11,126,114 tons valued at £9,782,002 at the pit's mouth. The external commerce in 1927 was as follows: Imports, oversea, £68,946,777; exports, oversea, £62,815,076. On June 30, 1927, 5750 miles of Government railways were open; the revenue for 1926-27 was £18,906,543; the expenditure, £13,795,853; the number of passengers carried, 141,615,806. There are seven private railways having a total mileage of 112 miles (mainly colliery lines).

Executive power is vested in a governor assisted by a cabinet, and legislative power in a bicameral legislature, consisting of a legislative council and a legislative assembly. The legislative council, which must not consist of less than 21 members, is appointed for life by the Crown, and consisted of 96 members in 1927. There are 90 members in the Legislative Assembly. Governor in 1928, Admiral Sir Dudley R. S. De Clair; Premier and Colonial Treasurer, T. R. Bavin.

NEW YORK. POPULATION. A census by the State was taken in 1925. This showed a population of 11,162,151, compared with 10,385,227 by

the Federal census in 1920. The population of New York City increased from 5,620,048 in 1920 to 5,873,356 in 1925. The Borough of Manhattan decreased from 2,284,103 in 1920 to 1,945,029 in 1925. All the other boroughs increased their populations. The U. S. Census Bureau estimate for July 1, 1928, was: New York City, 6,017,500; Borough of Bronx, 951,900; Borough of Brooklyn, 2,308,500; Borough of Manhattan 1,752,000; Borough of Queens, 854,400; Borough of Richmond, 150,700. The estimated population of the State on July 1, 1928, was 11,550,000. The capital is Albany.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Hay	1928	4,665,000	6,513,000 ^a	\$73,316,000
	1927	4,918,000	7,389,000 ^a	83,277,000
Potatoes	1928	284,000	32,376,000	21,044,000
	1927	270,000	28,620,000	35,775,000
Corn	1928	650,000	22,100,000	21,879,000
	1927	668,000	22,542,000	21,640,000
Oats	1928	1,020,000	33,660,000	18,176,000
	1927	1,000,000	35,000,000	19,250,000
Apples	1928	.....	21,900,000	24,090,000
	1927	.....	13,600,000	19,270,000
Wheat	1928	316,000	4,702,000	6,428,000
	1927	301,000	6,291,000	7,875,000
Barley	1928	169,000	4,648,000	3,625,000
	1927	188,000	5,452,000	4,362,000
Buckwheat	1928	192,000	3,475,000	3,128,000
	1927	201,000	4,221,000	3,546,000

^a tons.

MINERAL PRODUCTION. The output of pig iron, which made up 40 per cent of the total mineral production of the State in 1926, increased somewhat to 2,401,432 long tons for 1927, from 2,389,665 for 1926; the total had, however, a less value, \$40,803,579 for 1927 as against \$44,970,166 for 1926. The by-product coke ovens of the State continued their rapid rise, producing in 1927, 3,523,000 short tons of coke, as compared with 2,827,805 in 1926, which in turn had greatly exceeded 1925 production. Value of the 1927 coke total was not available; that of 1926 coke was \$17,453,226. Clay products, second in magnitude of the components of the State's mineral industry, attained \$29,999,053 for 1926, the latest recorded year; for 1925, \$24,550,751. Cement production was increasingly large: for 1927, 10,775,375 barrels; for 1926, 8,795,768. In value, cement shipments were: 1927, \$16,380,009; 1926, \$14,864,066. Ferro-alloys were extensively produced; the output was 104,198 long tons in 1926 and 115,764 in 1925; in value, \$13,045,938 in 1926 and \$12,811,534 in 1925. The gypsum industry was steady, producing 1,723,460 short tons in 1926 as against 1,730,254 in 1926; in value, \$16,794,589 in 1926 and in 1925, \$16,219,906. Salt producers disposed of 1,964,080 short tons of salt in 1927, slightly less than the 2,001,590 tons of 1926: the totals were valued at \$6,121,461 for 1927 and \$6,364,829 for 1926. Stone output was: 1926, \$13,713,620; 1925, \$12,358,238. The total value of the mineral products of the State, duplications eliminated, was for 1926, \$112,016,262; for 1925, \$102,035,557.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$144,710,772 (of which \$55,516,611 was for local education); for interest on debt, \$13,718,555; for permanent improvements, \$46,935,004; total, \$205,364,331 (of which \$37,504,245 was for high-

ways, \$16,372,198 being for maintenance and \$21,132,048 for construction). Revenue was \$215,473,758. Of this, property and special taxes formed 53.0 per cent; departmental earnings and charges for State officers' services, 3.7; sales of licenses, 33.0. Assessed valuation of property was \$20,795,221,086; State taxation thereon, \$22,722,895. Net funded State debt on June 30, 1927, was \$244,294,698. Much of the debt was offset by sinking fund assets; the total outstanding funded debt was \$342,000,309. Of outstanding debt, \$259,649,400 was for highways.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 8364.39. There were built in 1928, 19.52 miles of additional second track, 9.5 of third, and 9.5 of fourth, or other track.

At the close of the 1928 season of the New York State Barge Canal, it was reported that a total of 3,089,998 tons had been carried, an increase of 508,106 tons and a gain of 20 per cent over the 1927 totals, and breaking all-time tonnage records.

EDUCATION. More than 50 rural school sections, so Commissioner of Education Graves asserted in the *Journal* of the National Education Association, had up to the end of 1928 organized central school districts under the State Central Rural School Act, in the first three years of its operation. Work was done in planning a State-wide programme of junior-high-school instruction. For the academic year 1926-27, the school-age population of the State was placed at 2,587,901. There were enrolled in the public schools of the State 2,020,426 pupils, of whom 1,678,540 were in elementary and 341,886 in high schools. Expenditures of the year 1927 for public-school education totaled \$294,312,333.31. Salaries of teachers averaged \$2085.88.

CHARITIES AND CORRECTIONS. Activities of the State in the care or custody of persons were divided chiefly among three administrative departments: the Department of Correction, which cared for the prisons, reformatories, and criminal insane; Department of Charities, headed by a State board of 12 commissioners, which supervised almshouses, Indian affairs, private and local child-welfare and medical institutions, and administered certain special schools and hospitals; the Department of Mental Hygiene, which had authority over mental hospitals and schools.

State institutions, with their populations as in the fiscal year 1927, were Auburn Prison, Auburn, 1610; Clinton Prison, Dannemora, 1584; Great Meadow Prison, Comstock, 1124; Sing Sing Prison, Ossining, 1671; Dannemora State Hospital (criminal insane), 622; Matteawan State Hospital (criminal insane), 1017; State Reformatory, Elmira, 1290; State Training School, Albion, 200; State Reformatory for Women, Bedford Hills, 306; Institution for Defective Delinquents, Napanoch, 615; State Training School for Girls, Hudson, 395; State Agricultural and Industrial School, Industry, 661; Thomas Indian School, Iroquois, 193; State Women's Relief Corps Home, Oxford, 181; Hospital for Treatment of Incipient Pulmonary Tuberculosis, Raybrook, 308; Orthopedic Hospital for Children, West Haverstraw, 204; State Schools for Mental Defectives at Newark, 1203; Rome, 2604; Syracuse, 988; Letchworth Village, 2107; and Craig Colony, Sonyea, 1486; State Hospitals for the Insane: Binghamton, 2916; Brooklyn, 2550; Buffalo, 2525; Central Islip,

6500; Helmut, 1428; Wingdale, 541; Poughkeepsie, 4242; Kings Park, 5479; New York, 7214; Middletown, 3027; Rochester, 2001; Ogdensburg, 2429; Utica, 1929; Willard, 2628; State Camp for Veterans, Bath, 199; State School for the Blind, Batavia, 163. Mental patients in State Hospitals on Jan. 1, 1928, numbered 45,131, and formed 392.7 to the 100,000 of the population; prisoners in eight State penal institutions numbered 7531.

LEGISLATION. The State legislature convened in annual session January 4, and adjourned March 22. Governor Smith in his financial message submitted for the fiscal year 1928-1929 a budget calling for a total expenditure of \$229,269,065, which was to leave a surplus of about \$15,779,000 over existing surplus and expected revenues from existing sources. Accordingly no new taxation was sought. The total of appropriations passed in the course of the session increased the budget total by about \$3,000,000. The State ad valorem property tax rate was cut to one-half mill, from one mill, at the recommendation of the governor; a total tax reduction of about \$12,500,000 was thus effected. As a sequel to the defeat, at the polls, of the attempt made by the Republican legislative majority in 1927 to bring about a constitutional change providing for the election of State officers every four years, in presidential years, the governor and the Democratic minority put forward a bill to have these officers elected quadrennially, but in non-presidential years. This measure failed of passage, as did a measure for reapportionment of representation in the Legislature on the population basis. An extensive modernization of the housing law of the State was not passed, but the emergency rent laws, restricting the freedom of action of landlords, were again in part extended, so as to apply until June, 1929, upon apartments up to a rental of \$10 a month, and until Dec. 1, 1928, on those renting at from \$10 to \$15 a month. Of bills brought forward by the Baumes Crime Commission, dealing with the treatment of crime, eleven were enacted; these provided for the punishment of "fences," receivers of stolen goods, by admitting the uncorroborated testimony of the thief against the receiver; required that a purchaser of goods make reasonable inquiry as to the seller's right to dispose of them; permitted increase of the penalty for second-degree murder above 20 years, at the discretion of the judge; reformed the State Board of Parole, and created a Director of Parole, with subordinates, and with duties that included helping paroled prisoners to get employment. In order to render the plans for the elimination of grade crossings effectual, the Legislature passed at the recommendation of Governor Smith a measure to authorize the State to bear a portion of the localities' share of the cost of crossing elimination. There was enacted a measure to encourage and to regulate aviation.

The labor law was amended with regard to children under fourteen years of age so that they might not be employed in any gainful occupation, and to require that children under seventeen file with the employer, if working, an employment certification or vacation work permit. Work before 8 A. M. or after 6 P. M. was forbidden for those under sixteen. For the employment of children not physically sound, permits terminating every six months and renewable only after physical examination were required. Loan sharks were restricted and the business of

salary loans was regulated by an act restricting interest on such loans to 6 per cent, and specifying that repayment in excess of the original advance must be regarded as interest. A bill to reorganize the administration of workmen's compensation was vetoed by the governor as interfering with administrative functions. The field for the investment of legally limited funds was broadened, especially in admitting insurance investments in junior security issues.

The State adopted the reciprocal waiving of State tax on decedents' estates, retroactive to July 1, 1925, and adopted in all by 22 States; a previous enactment had been declared void by the State Court of Appeals because of discrimination between residents and non-residents in the wording. A measure to levy the entire decedent's estate tax on the residuary legatee was vetoed. Bills to authorize the construction of three private toll bridges were vetoed likewise. The New York City government was empowered to agree with the New York Central Railroad on the elimination of grade crossings along Eleventh Avenue. A measure to give the Board of Port Authority charge of a survey of transit conditions in the area about New York City was vetoed as overburdening the board. For the purchase of additional land for the restoration of the Revolutionary battlefield of Saratoga, \$90,000 was appropriated. The power of home rule as applying to large cities was extended in certain respects. A constitutional amendment was resolved, to permit voters to register on certain dates prior to September 20. An extensive programme of Governor Smith's including a referendum on his proposal of a water power authority, the creation of a commission to study motor vehicle accident compensation and numerous other features was rejected by the opposing majority.

POLITICAL AND OTHER EVENTS. Assertions of official misconduct brought in the previous year against Mrs. Florence E. S. Knapp, former Secretary of State of New York, with regard to the taking of the State census of 1925, were investigated by Randall J. Le Boeuf, Jr., appointed to the task by Governor Smith as a commissioner under the Moreland Act. The Le Boeuf report, filed January 22, found evidence of criminal irregularities and recommended that the State prosecute Mrs. Knapp and others. The District Attorney of Albany County, to whom the duty was first assigned, found the evidence insufficient to warrant prosecution. The governor on March 9 directed the State attorney-general to supersede the county prosecutor. Mrs. Knapp was accordingly indicted by a special grand jury, and was brought to trial at the beginning of May after delay due to the difficulty in securing the return to the State of a connection sought as a witness against her. It was testified that the name of the ostensible recipient had been forged on numerous pay checks for work supposed to have been done for the census, and that the proceeds of such checks had come into the possession of Mrs. Knapp. The trial jury disagreed, but the case was retried before another jury, and Mrs. Knapp was found guilty of grand larceny May 26. The case gained great attention because Mrs. Knapp had been the first woman to occupy a public elective post of high rank in the State.

The working of the State workmen's compensation law was investigated early in the year by the Industrial Survey Commission. As a re-

sult of accusations of wasteful handling of the compensation fund, brought at this investigation, Governor Smith at the end of January appointed Professor Lindsay Rogers, a Moreland Act commissioner, to inquire into the affairs of the Labor Department and of the Workmen's Compensation Bureau. The Report of the commissioner, rendered in June, acquitted the department and the compensation bureau of fraud, but recommended that the entire administration of the compensation law be put in the hands of the Industrial Board, the agency for the granting of claims.

A decision of the State Court of Appeals upheld an act of 1925 forbidding the control of State banks by voting trusts. This decision had the effect of dissolving a voting trust that controlled the Bank of America, one of the oldest banks in the country. On the termination of the voting trust, the Giannini interests, identified with the Bancitaly, gained control. Construction of a State office building at Albany, near the Capitol, was begun February 28, but was delayed by difficulty with the foundations.

Among the most important structural developments in and about New York City was the opening of two highway bridges between Staten Island and New Jersey, on June 20. One of these, named Goethals Bridge, connects Howland Hook with Elizabeth, and is 8000 feet in length; the other, named Outerbridge Crossing, extends from Tottenville to Perth-Amboy, and has a length of somewhat over 10,000 feet. The structures were built by the Board of Port Authority and were put into operation as toll bridges. The extension of the Fourteenth-Street-Eastern line of the Brooklyn-Manhattan Transit system was completed to Canarsie and opened for through service July 14.

The city took steps to acquire a municipal airport: a suggestion that the War Department allow it to acquire Governors Island for this purpose was not favorably regarded by Army authorities, but the Board of Estimate voted \$500,000 in February for the initial development work on Barren Island, an 800-acre tract in Jamaica Bay. No construction was undertaken in connection with the pending water supply projects of the city, delayed by failure to reach interstate agreement on the partition of the waters of the Delaware River, in the Legislative sessions of 1927. Hearings were held, however, at Kingston early in March, on a proposed plan by which the city would proceed to divert to its water system the waters of Rondout Creek, the Neversink River, and the East Branch of the Delaware River, without dependence on the approval of other States.

Accusations with regard to the building of sewers in the Borough of Queens were investigated by commissioners appointed by Governor Smith. The defense succeeded in enjoining the first of these investigators, Justice Townsend Scudder, from sitting, on the ground that he could not simultaneously hold judicial office and act as a delegate of the Governor. Clarence J. Shearn, a former supreme court justice, was then appointed in Scudder's place. He proceeded with the investigation of Borough President Maurice E. Connolly of Queens' Borough, who resigned his office early in April. Connolly was later convicted of conspiracy and condemned to a fine and prison sentence of a year.

Efforts to reach an arrangement by which the

city might establish municipal ownership of the transit system continued under the direction of Samuel Untermyer as special counsel to the Transit Commission. Finding the terms to be expected from the city unacceptable, the Interborough Rapid Transit system declared a rise in its fare to seven cents, which it did not, however, put into force, and applied to a special statutory Federal court of three judges to sustain its right to do so. The court accepted jurisdiction and after extended hearings and argument granted the Interborough an injunction to prevent the Transit Commission from interfering with the fare rise, which was declared legitimate on the ground that the later subway contracts had invalidated earlier fare regulation and that these contracts themselves must allow of alteration in the fare, by nature of the lack of power to make them absolute. The matter was appealed to the United State Supreme Court, and the operation of the 7-cent fare was held in abeyance pending the final outcome.

ELECTION. The Democratic presidential candidate, Governor Alfred E. Smith, being not only the Governor of the State but a native of New York City, the Democratic campaign in New York State was particularly intense. Factional disputes in the Democratic ranks in Queens County, connected with the choice of a successor to the Borough President of Queens, who left office under charges of mishandling the sewer construction contracts, diminished the Democratic vote in one important centre. The vote of November 6 gave Hoover and Curtis, the Republican National candidates, a plurality of slightly more than 100,000 over Smith and Robinson, in a total vote of considerably over 4,000,000. The Smith majority in New York City, was 453,805; it did not quite offset the Hoover majority in the remainder of the State. The presidential popular vote of 1928 was: Hoover (Rep.), 2,193,344; Smith (Dem.), 2,089,863. Senator Royal S. Copeland, Democrat, running for reelection, defeated the Republican candidate, Alanson B. Houghton, Ambassador to Great Britain. The political complexion of the State's delegation of Representatives was not extensively changed. On the State ticket, Franklin D. Roosevelt, Democrat, a strong supporter of Governor Smith, was elected governor, defeating Albert E. Ottinger, the republican candidate, by a close vote.

OFFICERS. Governor, Alfred E. Smith; Lieutenant-Governor, Edwin Corning; Secretary of State, Robert Moses; Comptroller, Morris S. Tremaine; Attorney-General, Albert Ottinger; Commissioner of Education, Frank P. Graves.

JUDICIARY. Court of Appeals: Chief Judge, Benjamin N. Cardozo; Associate Judges, Cuthbert W. Pound, Frederick E. Crane, William S. Andrews, Irving Lehman, Henry T. Kellogg, John F. O'Brien.

NEW YORK CITY. See NEW YORK.

NEW YORK CITY, PROPOSED EXPOSITION AT. See EXPOSITIONS.

NEW YORK PORT AUTHORITY. See BRIDGES.

NEW YORK UNIVERSITY. A non-sectarian institution for the higher education of men and women in New York City chartered in 1831. It comprises the following divisions: at University Heights, a college of arts and pure science, college of engineering, Guggenheim School of Aeronautics; at Washington Square, the graduate

school, school of law, school of commerce, accounts and finance, Washington Square College, school of retailing, school of education, university extension division, and institution of education; at Wall Street division, the graduate school of business administration, and courses in the schools of commerce, accounts, finance, and retailing; medical college, on East 26th Street; and dental college on East 23rd Street. The enrollment for the year 1927-28 in all divisions of the University, after deducting all duplications, was 33,692. The enrollment in the different degree-conferring units was as follows: university college of arts and pure science, 871; school of law, 1786; university and Bellevue Hospital Medical College, 473; college of engineering, 534; graduate school, 474; school of education, including both graduate and undergraduate divisions, 4013; school of commerce, accounts, and finance, including the Wall Street division, 3705; Washington Square College, 6394; graduate school of business administration, 554; school of retailing, 646; and college of dentistry, 414. In other divisions the enrollment was as follows: extension division, 3204; department of fine arts, 1611; public health (correspondence) courses, 95; life insurance training courses, 174. The faculty of the University numbered 1456 for the year 1927-28, including 84 appointments or promotions of professorial rank, made in the previous university year, six of the new appointments being of the rank of full professor, and 11 promotions being of that rank. The productive funds for the year 1927-28 amounted to \$4,290,325, and the income to \$5,569,656. The libraries contained 340,092 volumes. Among other substantial gifts received in the course of the year were a bequest of \$500,000 from the late Miss Emily O. Butler; from the Herman M. Biggs Memorial Fund Committee, for the Medical College, \$65,616; more than \$100,000 in anonymous gifts for laboratory and library installations at Washington Square College; a bequest of \$50,000 from the estate of the late Elbert H. Gary; a collection of early newspapers for which Horace Greeley set type and a collection of his original manuscripts, from his daughter, Mrs. Henry Clendenin. Plans were adopted for the erection near Washington Square, of a twelve-story building of Gothic design for the department of education, to be ready for occupancy in the autumn of 1929. Chancellor, Elmer Ellsworth Brown, Ph.D., LL.D.

NEW ZEALAND, ze'land, DOMINION OF. A self-governing British dominion in the southern Pacific Ocean, about 1200 miles east of Australia; consisting mainly of two islands, North and South islands; but comprising also Stewart Island and Chatham Island and a number of small islands. Capital, Wellington.

AREA AND POPULATION. The total area excluding the annexed islands is 103,568 square miles, distributed as follows: North Island, 44,131; South Island, 58,120; Stewart Island, 662; Chatham Island, 372; outlying islands, 284. According to the census of 1921, the population was 1,218,913. The population, April 1, 1927, was 1,439,980 for New Zealand proper, inclusive of Maoris (64,234); residents of Cook and other annexed islands, 14,088, and of Western Samoa (mandated territory), 42,028. On Mar. 31, 1928, the population for New Zealand alone was 1,388,700. The estimated population of the chief cities of New Zealand on Apr. 1, 1927, was as fol-

lows: Auckland, 202,400; Wellington, 126,750; Christchurch, 122,000; Dunedin, 83,250.

EDUCATION. Education is compulsory between the ages of 7 and 14. According to statistics, for Dec. 31, 1926, there were 2601 public primary schools, 6883 teachers, 216,807 scholars on the rolls, and an average attendance of 194,097. The native schools numbered 130, with 282 teachers and 6591 pupils; the private primary schools numbered 301, with 26,778 pupils. For secondary education there were 41 incorporated or endowed schools with 568 teachers and 13,651 students. The University of New Zealand was formerly solely an examining body, but by an act of 1926 it now actually consists of the following four university colleges: Otago University, Dunedin; Canterbury University College, Christchurch; Auckland University College; and Victoria University College, Wellington. The total number of students in 1926 was 4653.

PRODUCTION, ETC. In 1926 there were 1,990,000 acres of arable land in New Zealand, or about 3 per cent of the total area; 16,680,000 acres of permanent meadow and pasture; 163,000 acres of trees, shrubs, and bushes; and about 13,000,000 acres of forests. On Jan. 31, 1927, there were 3,242,000 cattle, 516,000 swine, 25,372,000 sheep, 26,000 goats, and 302,000 horses. Animal husbandry is much the major industry of the country. New Zealand is not an important cereal producing area. Oats and wheat are raised for local consumption, but a certain amount of grain is normally imported. The wheat crop for 1926-27 (7,952,000 bushels) was much above normal and a still larger crop was harvested in 1927-28 (about 9,200,000 bushels). Normally, about one-fourth of the oat crop is harvested for grain, the remainder being used as forage. The yield for 1927-28 in oats was estimated at 3,650,000 bushels against 4,997,000 for the preceding year. The barley yield in 1927-28 was 781,000 bushels and the potato yield 4,424,000 bushels. It was expected that the apple crop for 1927-28 would exceed 2,500,000 bushels, of which 900,000 cases would be shipped abroad. The wool production in 1926-27 (226,032,000 pounds) was the largest ever recorded. In the same year 57,762,000 pounds of pork, bacon, and ham were produced.

Mining is not important except in a few localities. Coal, gold, and silver are the leading products. Production of coal is limited because the Dominion is plentifully supplied with water power. New Zealand factories are confined largely to the preparation of pastoral and dairy products for the market, such as meat freezing, butter making, etc. During 1926-27 there were 4790 establishments with 81,649 employees, which distributed £16,866,000 in wages. Increases were noted over the preceding year in motor and cycle plants and furniture and cabinet-making factories, but for manufactures as a whole there was practically no change. The value of the factory output in 1925-26 was \$411,000,000.

COMMERCE. New Zealand's domestic prosperity is so dependent upon the satisfactory status of its foreign trade relations that unfavorable trade balances are regarded with considerable concern and uneasiness. Following the unfavorable balance of 1926, the business community entered upon the new year determined to right the situation. New import commitments were made with caution, and bankers tightened credit in all branches of business, particularly where imports

were concerned. As a result of this policy, and of an increase in the value of exports, oversea trade in 1927 was favorable to the Dominion to the comfortable amount of £3,714,408. Imports were valued at £44,782,046, as compared with £49,889,563 for the preceding year, while exports increased from £45,275,575 in 1926 to £48,496,354 in 1927. Very few items of import registered gains, while losses were spread widely over the list. The bulk of the £5,106,617 decline, however, was accounted for by smaller receipts of motor vehicles and parts, sugar, apparel and clothing, benzine, and motor spirits. The advance of £3,220,779 over 1926 exports was attributable chiefly to larger shipments of butter and wool, butter alone advancing £2,220,193 in value.

The United Kingdom as usual was New Zealand's best customer, taking goods valued at £36,877,887, or about 76 per cent of the total, and in exchange supplied almost 48 per cent of the Dominion's imports. New Zealand's efforts during the year to reduce imports were most effective as regards those commodities supplied mainly by the United States, such as motor vehicles and parts, and motor spirits. As a result the American share of the Dominion's imports declined from the 20 per cent which that country supplied in 1926 to around 18 per cent in 1927.

New Zealand's trade position greatly improved during the year ended Sept. 30, 1928. Exports reached £56,248,592, against imports of £44,140,402, resulting in a favorable balance of £12,108,190. During the 12 months ended Sept. 30, 1927, exports of £45,845,343 and imports of £46,169,234 gave an unfavorable balance of £323,891.

FINANCE. The following table from the Commerce Year Book for 1928 gives the actual results of the 1926-27 budget and the estimates for 1927-28:

GOVERNMENT RECEIPTS AND EXPENDITURES
[Thousands of Pounds Sterling]

	1926-27, actual	1927-28, budget
Ordinary receipts	24,943	24,677
Customs and excise	8,874	8,885
Land tax	1,229	1,205
Income tax	3,422	3,425
Death duties	1,690	3,403
Other taxes	1,685	
Posts, telegraphs, and telephones (gross)	2,853	3,254
Interest on railway capital liability	2,043	2,180
All other receipts	8,147	2,825
Equivalent total ^a (\$1000)	121,385	120,091
Ordinary expenditures	24,356	24,259
Debt service	9,746	9,740
National defense	1,020	958
Pensions	2,458	^(b)
Education	2,980	3,003
Posts, telegraphs, and telephones (working expenses)	2,343	2,394
Losses on isolated railway sections and branch lines	429	^(b)
All other expenditures	5,380	8,164
Equivalent total ^a (\$1000)	118,528	118,056

^a Converted at par. ^b Not available.

The public debt on Mar. 31, 1927, amounted to \$1,196,434,000.

COMMUNICATIONS. The merchant marine in 1926 comprised 558 vessels (all sizes) with a capacity of 202,354 gross tons. In the same year 678 vessels of 2,261,000 net registered tons entered the ports of the Dominion and 665 of 2,237,000 tons cleared.

For the year ending Mar. 31, 1928, the New Zealand Government Railroads reported gross revenue of £8,524,538 and total expenses of £6,685,123, as compared with gross revenues of £8,434,654 and total expenses of £6,490,880 for the previous year. Gross earnings declined from £1,943,774 in 1926-27 to £1,839,415 in 1927-28 while the deficit after interest charges was £291,452 in 1927-28 as against £99,659 in 1926-27. There was a reduction from the previous year of 622,500 in the number of passengers handled, but an increase of about 45,000 tons in freight handled. At the end of 1927-28 there were 678 locomotives in service, or 20 less than in 1926-27. There were in service 26,736 units of freight equipment and 1612 passenger cars. The total length of line at the end of 1926-27 was 3281 miles, of which only 117 miles were privately owned and operated.

GOVERNMENT. Executive power is vested in a governor-general appointed by the Crown and legislative power in the governor-general and a general assembly of two houses, namely the Legislative Council of 41 members (September, 1927), appointed for seven years but to be elected after the expiration of the terms of the members sitting in 1923, and the House of Representatives, consisting of 80 members, elected by the people for three years. The Governor-General in 1928 was General Sir Charles Fergusson. The cabinet was constituted as follows: Prime Minister, Railways, Native Affairs, etc., J. G. Coates; Finance, W. D. Stewart; Postmaster-General, Telegraphs, External Affairs, Immigration, etc., W. Nosworthy; Labor, Mines, and Marine, G. J. Anderson; Lands, Industry, and Commerce, A. D. McLeod; Minister for Cook Island, Sir M. Pomare; Agriculture, O. J. Hawken; Attorney-General, Justice, and Defense, F. J. Rolleston; Health, J. A. Young; Education, R. A. Wright; Public Works, K. S. Williams.

HISTORY. The outstanding event of the year in New Zealand was the general election held on November 14. Premier Coates, the leader of the Reform party, was badly defeated and his party lost control of the legislature. The position of prime minister was taken over in the middle of December by Sir Joseph Ward, the leader of the United Liberal party. The question of prohibition, which must be voted upon at stated intervals in New Zealand was placed before the voters and the majority was more than 100,000 in favor of retaining the license system in practice.

NICARAGUA, nē'kà-rū'gwà. The largest of the Central American republics. It is bounded on the north by Honduras, on the east by the Caribbean Sea, on the south by Costa Rica, and on the west by the Pacific Ocean. Capital, Managua.

AREA AND POPULATION. The area is estimated at about 51,660 square miles, of which 4500 square miles are lake area. Population, according to the census of 1920, 638,118, or about 14 inhabitants to the square mile. The coast line is 300 miles on the Atlantic and 200 miles on the Pacific. The population consists almost entirely of Indians and Negroes and mixtures of the two with white blood. The proportion of pure white blood is about 10 per cent. About 75 per cent of the population lives in the western half of the country. The eastern and western sections differ greatly and there is very little communication between them, the journey by trail and river being difficult. Travelers going from one coast to

the other usually go by way of Costa Rica or through the Panama Canal.

The population of the various cities in Nicaragua in 1926 as shown by a census made by their respective departments of sanitation was reported to be as follows: Managua, the capital, 32,536; Leon, 23,565; Granada, 18,066; Masaya, 13,763; Chinandega, 10,307; Rivas, 4081; Matagalpa, 3142; and Corinto, 2307.

EDUCATION. Primary education covers a period of six years, following European rather than American lines. According to statistics for 1925, there were 460 primary schools, with 1105 teachers, an enrollment of 30,210, and an average attendance of 24,490. Secondary education is given in eight institutions, three being wholly governmental, three partially subsidized municipal, and two normal schools. The attendance at these schools was 466. In addition to the schools mentioned there are 160 schools, municipal and private, both primary and secondary, having about 439 teachers and 8222 pupils. These private schools are nearly all conducted by religious organizations. Higher education is provided by five professional faculties, unsalaried and receiving little governmental aid, three of law and two of medicine.

PRODUCTION, ETC. Nicaragua is essentially an agricultural country. As in the past, it must depend upon its agricultural products, seconded by timber and mineral wealth, for its widest future development. The principal agricultural products are bananas and other fruits, coffee, and coconuts. Other crops are wheat, rice, and tobacco. The chief purely economic reason for the unfavorable features of 1927 may be found in the smaller coffee crop of 1926-27. Exports were barely half as great in value as in 1926. The 1927-28 crop, while less than in 1925-26, was estimated to be about 17,500 short tons (for export), or 50 per cent larger than in 1926-27. The sugar crop of 1926-27 was also much smaller, being about 11,250 short tons as compared with 17,500 tons in 1926. Estimates of the 1927-28 crop placed it at 17,500 short tons of which 12,500 tons would be available for export. There are valuable forest woods, especially mahogany and cedar, which enter into the exports; also dye woods, gum, and medicinal plants. The mineral resources include gold, silver, copper, and precious stones. Manufacturing, apart from sawmills, is confined to a few sugar mills, distilleries, and small industries for articles of home consumption.

FINANCE. The revenues of Nicaragua in 1927, exclusive of loans, advances, credits, and similar items, were \$4,918,295. This figure included \$4,685,601 actually collected and delivered to the Government and \$52,694 placed on deposit by the collector of customs. The exact expenditures were not specifically stated in the report of the High Commission. They could not have been stated definitely, for there were many liabilities pertaining to the year 1927 which had not been finally determined. All of these liabilities accrued as a result of the civil struggle; they consist of claims and debts, most of which will have to be passed upon by the claims commission, established under a law of Dec. 1, 1926, before the amount is definitely fixed. The commission began to receive claims on July 1, 1927. By Dec. 31, 1927, claims and vouchers totaling \$16,813,821 had been filed by individuals and by Government ministries. Of the \$4,918,295 collected,

\$1,589,078 was expended for interest and amortization of the debt and \$3,329,217 for administration and war expenses. The total funded debt on March 31, 1927, amounted to \$10,183,000.

IMPORTS AND EXPORTS BY PRINCIPAL COMMODITIES

Commodity	Total trade	
	Quantity	Value (\$1,000)
	1927	1927
General imports, total	10,208	10,208
Meats and lard	1,112	180
Wheat flour	78,880	520
Vegetables	3,109	180
Spirits distilled	25,060	107
Cigars and cigarettes	198,480	152
Leather	92,417	177
Boots and shoes	120,340	219
Cotton manufactures	3,566	2,328
Jute bags	1,255	154
Woolen manufactures	107,847	155
Silk and manufactures	73,340	285
Gasoline, naphtha	17,430	132
Kerosene	19,629	153
Iron and steel	5,707	639
Agricultural machinery	284	105
Electrical machinery	88	103
Other machinery		491
Automobiles and parts	161	169
Chemicals, drugs, dyes, medicines		436
Perfumery, cosmetics, toilet preparations		145
Soap	1,787	166
Domestic exports, total		8,986
Bananas	2,386	1,442
Coffee	22,542	4,082
Sugar, refined	11,906	443
Hides and skins	847	206
Mahogany	16,555	1,337
Gold		614
Silver		22
Containers, empty	1,388	121

COMMERCE. The preceding table from the *Commerce Year Book* for 1928 gives the items of the trade of 1927.

The United States supplied 66.4 per cent of the imports and took 55.6 per cent of the exports.

COMMUNICATIONS. The number of steam vessels engaged in foreign trade entered at Nicaraguan ports in 1927 was 434 with a capacity of 639,000 net registered tons. Steam vessels clearing numbered 438 with a capacity of 649,000 tons. There are 163 miles of railway line belonging to the Government and 20 miles of private line. For the year ended June 30, 1927, 577,000 passengers were carried and 87,000 metric tons of freight, with gross receipts of \$921,000. There are 101 post offices and 919,000 pieces of mail were handled in 1926. In the same year there were 1800 miles of telegraph wire, 899,000 telegrams were sent, and the gross telegraph receipts were \$129,000; 1143 miles of telephone wire, 1095 instruments, and gross receipts of \$39,000.

GOVERNMENT. Executive power is vested in a president who acts through a responsible ministry, comprising departments of foreign affairs and public instruction, finance, interior, justice, war and marine, and public works; legislative power is in a bicameral legislature consisting of a chamber of 40 deputies elected for four years by universal suffrage, and a senate of 13 members elected for six years. The constitution is modeled after that of the United States. President in 1928, Alfonso Diaz.

HISTORY

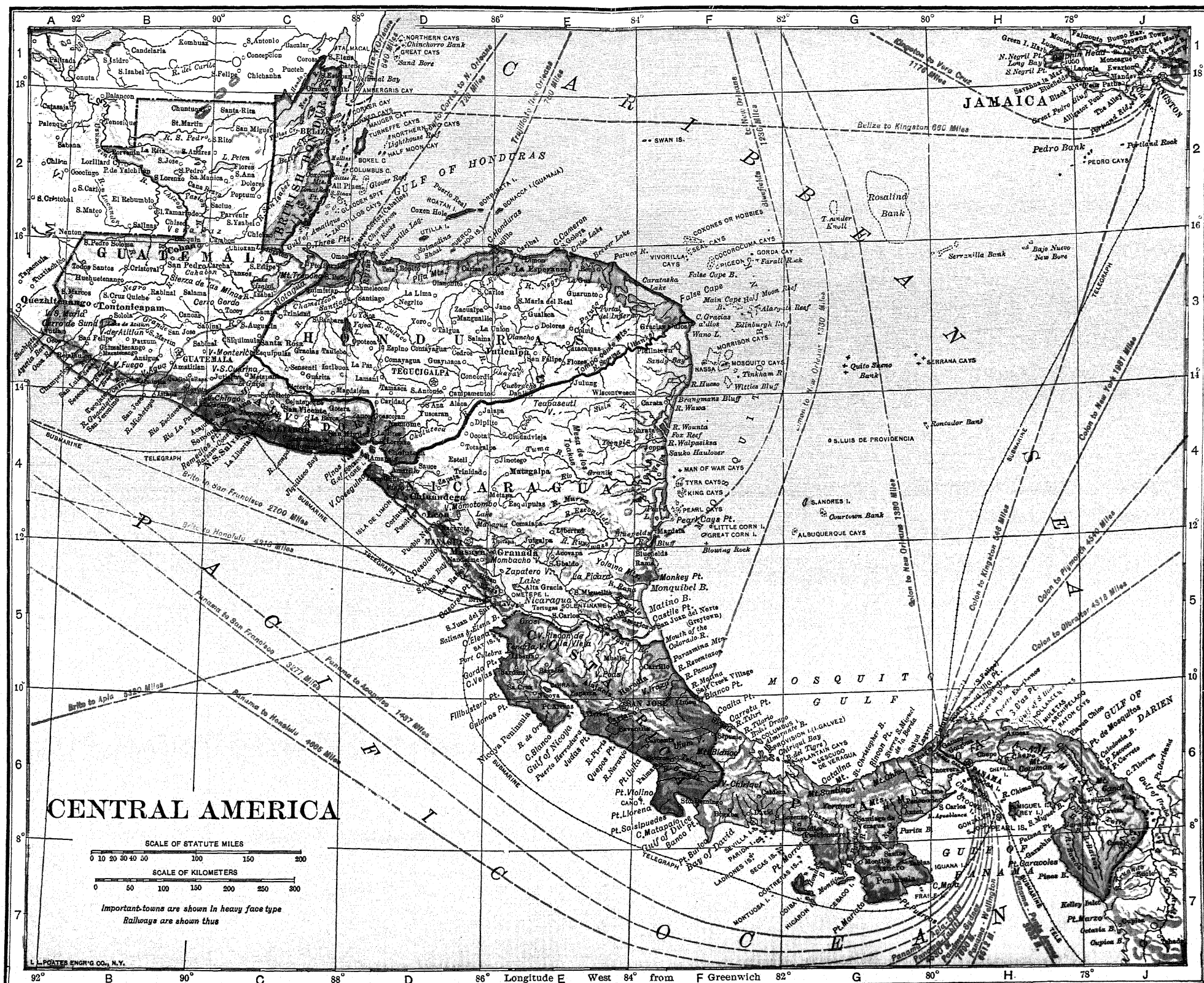
The revolt of General Sandino, who refused to accept the American plan of holding an impartial

election (see preceding YEAR BOOK), continued throughout the year, but with gradually diminishing force. The United States Government, determined to suppress this so-called bandit, increased the forces of marines and supplied them with airplanes in the early part of the year and the American press from time to time cited notable advances with the resultant death or wounding of many of the followers of Sandino with scarcely any loss of life on the part of the marines. In the meantime there was severe criticism of the American policy both at home and abroad.

The plan for the control of the elections to be held in the fall to be under the complete supervision of Brig. Gen. Frank R. McCoy, U. S. A., met with considerable opposition on the part of the Conservative leader, General Chamorro. A bill to grant General McCoy full powers was passed by the Senate, but was virtually rejected in the House and a measure substituted which would practically take all the power from the American supervisors. The American authorities and President Diaz rejected this measure and stoutly maintained that the Stimson agreement, described in the preceding YEAR BOOK, would be carried out. While the discussion was at its height, the Liberal party held a convention and nominated General José Moncada and Dr. Antonio Medrano for the presidency and vice presidency, respectively. It will be recalled that General Moncada was the leader of the Liberal revolt against President Diaz which was ended by the Stimson agreement. The Conservatives in the lower chamber finally rejected the electoral bill on March 13.

This action was followed by a decree of President Diaz to the effect that the National Board of Elections (General McCoy's group) were vested with full and general authority to supervise the elections of 1928 and to prescribe all measures necessary for the registration of voters, for the casting and counting of ballots and regarding all other matters that may pertain to the election. On July 26 the Conservative party selected as their candidate for the presidency, Adolfo Bernard. He was a compromise choice between President Diaz and General Chamorro, neither of whom was strong enough in the Conservative convention to have his particular candidate nominated. General McCoy made thorough and efficient plans for the conduct of the election. Registration days were provided for in late September and early October, the sale of liquor was absolutely forbidden, an American official was to be stationed in each of the 351 voting stations, and voters were to be marked chemically to prevent "repeating." Almost 145,000 citizens registered on the days set aside for that purpose, creating a record number of voters for the country.

In addition to the Nicaraguan constabulary, almost 10,000 United States marines and sailors were stationed throughout the country on election day, November 4. The election was carried out without any disorders, however, and as a result General Moncada, the Liberal candidate, was returned the victor over his Conservative opponent, Adolfo Bernard, by a majority of approximately 20,000. Over four-fifths of the registered voters appeared at the polls to cast their ballots. In the legislature, the results were about equal. In the Senate the Liberals and Conservatives had an equal number of representatives and



in the house the Conservatives had one more member than the Liberals.

It was reported that the election was carried out peaceably even in those districts which were supposed to be under the control of General Sandino. Apparently, the method of conducting the election was satisfactory to both parties and they spared no effort to show acts of friendliness toward General McCoy and the United States in general. General McCoy and the National Elections Board handed in their resignations on December 15 and on December 29 the new Nicaraguan Congress almost unanimously passed a resolution of approval of the work of the Board. General Moncada was to be inaugurated on Jan. 1, 1929.

At the close of the year, it seemed that peace was at last to dawn upon the war-torn country. Although nothing much has been mentioned here concerning the activities of the marines and Sandino, suffice it to say that his forces were scattered in the north and he, himself, was virtually without a following. According to a report from marine headquarters issued on December 31, more than 1700 "rebels" had surrendered during 1928 and "the entire country is in the most peaceful state it has even been, notwithstanding some local rumors and reports to the contrary." Actual American and Nicaraguan losses in the conflict are probably unknown. Secretary of the Navy Wilbur stated that from May 4, 1927, to Apr. 17, 1928, 21 marines lost their lives. The loss among the followers of Sandino were placed as high as 1000, although this figure is purely conjectural. See UNITED STATES, ADMINISTRATION.

NICOLSON, ARTHUR. See CARNOCK, LORD.

NIGERIA, COLONY AND PROTECTORATE OF. A West African territory, belonging to Great Britain, divided into two groups of provinces, known respectively as the Northern and Southern Provinces. The area is approximately 335,700 square miles and the population, according to an estimate in 1927, 18,765,690, of whom 10,232,832 were in the Northern Provinces (area, 258,000 square miles). There were 5200 Europeans in 1927. For administrative purposes the mandated territory of Kamerund is attached to Nigeria. The seat of government is at Lagos. In 1925 in the Northern Provinces there were 53 government schools and 124 unassisted private schools, the total average attendance in the government schools being about 2125. It was estimated that there were 28,702 Mohammedan schools, with 335,208 pupils. In the Southern Provinces in the same year there were 49 government schools with an average attendance of 7751; 205 assisted schools with an enrollment of 37,077; 3200 unassisted schools, with an enrollment of 133,900. The chief products are palm kernels, palm oil, rubber, peanuts, animal products, shea butter, ivory, cacao, kola nuts, coffee, drugs, and tobacco. The forests supply mahogany, which is exported. Iron, lead, and tin are worked by the natives, and gold, silver, lignite, monazite, galena, and manganese ore are found. Nigeria is the sixth largest producer of tin in the world, the total output in 1926 being 10,562 tons of tin concentrates. The imports in 1926 were valued at £13,597,480 and the exports at £17,339,618. The chief article of import was manufactured goods and the chief articles of export, palm oil and palm kernels. The total shipping which entered and cleared from the ports of Nigeria was 3,096,115

tons, of which 1,787,417 tons was British. The revenue in 1926-27 was £7,734,429 and the expenditure £7,584,692; public debt, £23,559,209. Railways open for traffic in 1926 totaled 1265 miles.

The administration is in the hands of a governor and an executive and legislative council. Governor. Sir G. Thomson.

NITRATE OF SODA PRODUCTION. See CHILE.

NITROGEN, NITROGEN COMPOUNDS. See FERTILIZERS.

NOBEL PRIZES. The Swedish Academy on November 12 awarded the Nobel Prize for Literature for 1928 to the novelist, Mme. Sigrid Undset, the third Norwegian author to receive this honor. On the same occasion, the Nobel Prize for Literature for 1927 went to Henri Bergson. Mme. Undset, the greatest living woman writer of Norway, became known to the English-speaking world largely through the translations of *Kristin Lavransdatter* and *Olaf Audunssøn i Hestviken*, which appeared in 1925 and 1928, respectively. She was born in Kallundborg, Denmark, May 20, 1882, was educated in a business college, and worked as municipal clerk in Christiania until 1909, two years after the appearance of her first novel. Mme. Undset is a historical novelist who applies the methods of modern realism in treating the life of the thirteenth and fourteenth centuries. Henri Bergson, French author and philosopher, who received the prize held over from 1927, is a member of the Académie Française, to which he was elected in 1914. After teaching for a number of years in various schools, he became a professor in 1900 in the Collège de France, with which he was connected until his resignation in 1919. For a time he served as the first head of the League of Nations Institute for Intellectual Co-operation, but retired on account of poor health. M. Bergson is best known for his theory of evolution, which appeared in 1907 in *Creative Evolution*. This work has exerted a profound influence on both science and philosophy.

The Nobel prizes for Chemistry for 1927 and 1928 were awarded to Prof. Heinrich Wieland, of Munich, Germany, in recognition of his investigations of the complex compound known as bile acid, and to Dr. Adolf Windaus, of Goettingen, Germany, for his study of vitamins. Dr. Windaus, who is a member of the German Academy of Natural Sciences, professor in the University of Goettingen, and head of the Chemical Institute there, brought to a climax the investigations carried on in the United States and Germany for many years on the antirachitic properties of food. His experiments proved that ultra-violet light, either in the sunlight or artificially produced, will activate ergosterol, a remedy against rickets. (See RICKETS.) Professor Wieland was not only a chemist, but had received doctorates in philosophy, engineering, and medicine, was a member of the academies of Munich, Goettingen, and Heidelberg, as well as editor of *Liebig's Annals of Chemistry*, and a writer on organic and bio-chemistry. The award to Professor Wieland was in recognition of his discovery of the structure which gives bile its color, and the relation between this compound and chlorophyll, the coloring matter of green leaves, and hemoglobin, the coloring matter of blood.

The 1928 Nobel Prize in Medicine was awarded on October 25 to Dr. Charles Nicolle, head of the

Pasteur Institute in Tunis, for his contributions to anti-typhus warfare. His earlier studies of typhus fever in Algiers and subsequent contributions by himself and others were of great value in banishing the spotted-fever pestilence from the armies of the more progressive countries during the World War.

The 1928 physics prize was reserved until 1929. The monetary value of each of the awards in 1928 amounted to about \$42,060, the largest amount yet presented, due to the remission of some of the Swedish taxes and also to better business conditions which increased the yield on the investments. The prizes were for \$32,478 each in 1927.

NOGUCHI, no'gōō-chē, HIDEYO. Japanese-American physician and bacteriologist, died at Accra, Gold Coast, West Africa, May 21. The death of Doctor Noguchi, one of the world's foremost medical scientists, was caused by African yellow fever, which he was investigating for the Rockefeller Foundation, of New York. He died in an attempt to discover the relation between the African and the American forms of yellow fever, and it was said that as an indirect result of his own illness with it, which had confined him to a hospital from Dec. 28, 1927, to Jan. 9, 1928, he had found the cause of the dreaded African form. His own was the first case to come under his observation. On May 30, 1928, Dr. William Alexander Young, director of medical research at Accra and assistant to Dr. Noguchi, died there of the same disease (see biographical sketch under YOUNG, W. A.), and, in 1927, it carried off Dr. Adrian Stokes, English investigator. See NEW INTERNATIONAL YEAR BOOK 1927.

Dr. Noguchi was born at Inawashiro, Japan, Nov. 24, 1876. He was educated at public schools and was tutored in English, French, and German, speaking all three languages fluently. He was graduated from the Tokyo Medical College in 1897 and became assistant in the General Hospital there. He held several public medical offices in Japan, among them that of quarantine officer of the Yokohama Harbor Station in 1899, and for a time was physician in charge of the Central Hospital at Newchwang, China. In 1901 he went to the United States and studied at the University of Pennsylvania. In 1903-04 he was connected with the Staten Serums Institute, Copenhagen, Denmark. Returning to America, he worked at the Carnegie Institution in Washington, and in 1904 he joined the staff of the Rockefeller Institute, New York, of which he became a member in 1914.

During work on yellow fever in South America in 1918, Dr. Noguchi isolated a germ believed to be the cause of yellow fever. From it he developed a preventive vaccine and a causative serum that proved fairly efficacious if used within two or three days after the onset of the disease. Dr. Noguchi gave special attention to the serpent venoms, the microscopy of infantile paralysis, hydrophobia, and syphilis, and to the spirochetæ; and he found a method of hemolytically diagnosing syphilis, following Wassermann's method, the so-called Noguchi luetin reaction. His most striking achievement after joining the staff of the Rockefeller Institute was the discovery of the yellow fever microorganism and serum. The list of diseases which engaged the attention of Dr. Noguchi, and concerning which he made important discoveries, is a long one. Be-

sides those already mentioned, trachoma, jaundice, and rabies may be named. In the case of trachoma, it was said that his researches on and his isolation, in September, 1927, of an organism which would reproduce the disease in monkeys, would eventually go far toward the eradication of this dangerous disease of the eyes.

For many years before his death, the work of Dr. Noguchi met with recognition from governments, universities, and bodies of scientists of many kinds. The Imperial Government of Japan conferred a titular professorship upon him in 1911 and the degree of Ph.D. in 1914. Among the universities which conferred degrees on him were the University of Pennsylvania, the School of Medicine and Pharmacy of Yucatan, Brown University, Yale University, and the University of Paris. The Emperor of Japan admitted him to the Order of Merit in 1915 and the City of Philadelphia bestowed on him the John Scott Medal in 1921. His other honors included knighthoods in Japanese, French, Spanish, Danish, and Swedish orders of chivalry, and he held memberships in the Association of American Physicians, the Association of American Pathologists and Bacteriologists, the American Society for experimental pathology, and many other societies, American and foreign. He wrote, besides reports, papers, etc., the following: *Snake Venoms* (1909); *Serum Diagnosis of Syphilis and Luetin Reaction* (1910); *Laboratory Diagnosis of Syphilis* (1923). See YELLOW FEVER.

NORDENSKJÖLD, nō'ren-shēld, NILS OTTO GUSTAF. Swedish geographer and explorer, died at Göteborg, June 2. He was born on the Island of Sjögelö, Småland, Dec. 6, 1869. He was a nephew of the famous geographer and explorer, Baron Nils Adolf Erik Nordenskjöld. He was educated at Upsala, where he became docent in mineralogy and geology in 1894 and where he gained the doctorate (1894). In 1905 he became professor of ethnology and geography at Göteborg. In 1895-97 he made a scientific expedition to the Strait of Magellan and Patagonia and in 1898 an expedition to Alaska. As a geologist he participated in the exploration (1900) of Christian IX Land, east Greenland, and later (1909) investigated the districts of Holstenborg and Ivigtut, southwest Greenland. He commanded the Swedish Antarctic Expedition (1901-04) which added Oscar II Land to the known area of Palmer (Graham) Land, discovered Crown Prince Gustav Channel, and made important contributions to antarctic knowledge, especially in geology. He spent 20 years lecturing and writing to pay off the debts incurred in publishing the scientific treatises resulting from that expedition. His last expedition was one to the western part of South America, which he made in 1920. Nordenskjöld was honored by various scientific societies at home and abroad and was a member of the committee of the International Polar Commission. Apart from his many technical memoirs, which included studies in geography, Antarctic ice conditions, cretaceous fossils, and plant remains discovered during his explorations, he wrote *The Geology and Physical Geography of East Greenland* (1908) and *Antarctica* (1904, in six languages).

NOREN, nō'ren, HEINRICH GOTTLIEB. A German composer, died at Rottach, in July. He was born in Graz, Jan. 6, 1861. A pupil of Massart in Paris, he filled positions as concert-master in various orchestras until, in 1896, he settled in

Krefeld as director of his own conservatory. From 1902-7 he was professor at Stern's Conservatory in Berlin, then lived in Dresden until 1911 and returned to Berlin, devoting himself entirely to composition. In 1907 he attracted considerable attention with *Kaleidoskop*, a series of variations for orchestra on a theme from Strauss's *Heldenleben*. Although intended as an act of homage to the famous composer, the latter instituted a lawsuit, which, in the end, proved a most valuable advertisement for Noren. His other works include a Symphony in B minor, *Vita*; *Elegische Gesangsscene* for cello and orchestra; a violin-concerto in A minor; chamber-music, and numerous choruses for male voices. In manuscript, he left an opera, *Der Schleier der Beatrice*.

NORMAL SCHOOLS. See UNIVERSITIES AND COLLEGES.

NORTH AMERICA. See EXPLORATION.

NORTH CAROLINA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,559,123. The estimated population on July 1, 1928, was 2,938,000. The capital is Raleigh.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Tobacco	1928	730,000	475,230,000 *	\$87,918,000
	1927	659,000	485,683,000 *	106,850,000
Cotton	1928	1,890,000	840,000 *	77,700,000
	1927	1,728,000	861,000 *	83,948,000
Corn	1928	2,305,000	42,642,000	43,921,000
	1927	2,352,000	53,626,000	48,800,000
Hay	1928	804,000	794,000 *	13,502,000
	1927	858,000	818,000 *	14,462,000
Potatoes	1928	95,000	10,545,000	6,854,000
	1927	72,000	7,368,000	11,052,000
Sweet potatoes	1928	80,000	7,840,000	6,664,000
	1927	89,000	10,146,000	8,117,000
Peanuts	1928	195,000	185,250,000 *	9,065,000
	1927	211,000	201,294,000 *	9,058,000
Wheat	1928	444,000	5,150,000	7,828,000
	1927	483,000	5,168,000	7,494,000
Oats	1928	191,000	4,202,000	3,278,000
	1927	273,000	5,733,000	4,128,000
Soy beans	1928	196,000	1,081,000	1,735,000
	1927	184,000	1,410,000	2,115,000

* pounds, * bales, * tons.

MINERAL PRODUCTION. Foremost of the State's mineral industries in total yearly output, clay products again in 1926, the latest year recorded, slightly exceeded the total of stone production, which was a close second. Clay products of 1926 amounted to \$4,256,901; those of 1925 to \$3,868,962. Stone was quarried to the quantity of 1,843,480 short tons in 1926 and 1,565,690 in 1925; and to the value of \$4,005,087 in 1926 and \$3,478,855 in 1925. The production of sand and gravel in 1926 attained \$968,021. Leading the States in the production of crude feldspar, North Carolina attained an output for 1926 of 91,433 long tons, as against 76,806 in 1925; in value, \$602,020 for 1926 and \$496,563 for 1925. Among the other mineral products of 1926 were coal, copper, and mica, all in totals of less than \$250,000. The total value of the State's mineral products was \$12,566,882 for 1927; \$10,992,793 for 1926; for 1925, \$9,504,063.

The production of food fish is an important industry in North Carolina. The total catch for 1927 amounted in value to \$1,515,596.36, distributed as follows: Shad, \$551,836.78; trout, \$293,457.91; blue fish, \$71,301.38; croakers, \$99,-

444.51; herring, \$116,253.99; mullets, \$91,248.11; rock, \$76,243.76; mackerel, \$42,574.34; all others, \$173,235.58.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$18,142,100 (of which \$2,074,306 was aid to local education); for conducting public service enterprises, \$9,952; for interest on debt, \$6,125,268; for permanent improvements, \$22,501,890; total, \$46,779,210 (of which \$24,534,293 was for highways, \$4,206,686 being for maintenance and \$20,327,607 for construction). Revenues were \$35,826,832. Of this, special taxes formed 21.5 per cent (there being no general property tax); departmental earnings and charges for State officials' services formed 11.9 per cent; sales of licenses and taxation of gasoline, 50.1 per cent. Net funded State debt, notably increased in the course of the year, was on June 30, 1927, \$147,981,294. Highway bonds outstanding totaled \$94,999,600.

TRANSPORTATION. The total number of miles of railroad line under operation in the State on Jan. 1, 1928, was 5223.1. No construction of additional mileage in 1928 was reported.

EDUCATION. The facilities for rural-school instruction were increased, according to State Superintendent Allen, in the *Journal* of the National Education Association, by provision for daily transportation of 25,000 more pupils and for extending the school term to eight months, from six, for 30,000 additional children. For the academic year 1927-28, the school-age population was placed at 996,122. There were enrolled in the public schools of the State 848,778 pupils, of whom 748,087 were in elementary, and 100,691 in high schools. Expenditure for public-school education in 1926-27 totaled \$36,701,501.36, of which \$25,565,974.73 was current. Salaries of teachers in that year averaged \$768.94.

CHARITIES AND CORRECTIONS. The State Board of Charities and Public Welfare as operating in 1928 was composed of seven members, one by law a woman, elected by the General Assembly upon recommendation of the governor, for six-year terms. The board had an executive officer, the Commissioner of Public Welfare. Through divisions of child welfare, mental health, institutions, county organization, school attendance, and work among Negroes, it performed the functions indicated. The work was largely on a county basis. Institutions under the board's supervision were: State Hospital for the Insane, Raleigh; State Hospital for the Insane, Morganton; State Hospital for Colored Insane, Goldsboro; Caswell Training School, Kinston; State's Prison, Raleigh; East Carolina Training School for Boys, Rocky Mount; Stonewall Jackson Training School for Boys, Concord; State Home and Industrial School for Girls, Samareand; Morrison Training School for Delinquent Negro Boys; North Carolina Orthopedic Hospital, Gastonia.

POLITICAL AND OTHER EVENTS. Participation of the State with Tennessee in the joint work of acquiring lands for the contemplated Smoky Mountain National Park was delayed by litigation brought by a lumber company in the area involved. The issue of \$2,000,000 of bonds of North Carolina was postponed to await the outcome of the suit. The State continued its policy of defraying road construction with bond issues, offering an issue of \$10,000,000 of its bonds in April. The State of Connecticut, after bringing

suit against North Carolina to recover on \$290,000 of repudiated bonds of the Reconstruction era, which had come into the hands of one of the State institutions, withdrew its case in the United States Supreme Court. Investigations of the pottery industry in Ohio were conducted, with a view to possible pottery development in North Carolina, where recent power installations supplied opportunities for industrial expansion.

ELECTION. North Carolina gave a Republican majority for the first time since 1872 in the popular vote for President on November 6. A strong movement against the Democratic presidential candidate, Alfred E. Smith, had got under way in advance of the State primaries of June 2. Some of the opposing faction favored Cordell Hull, of Tennessee, while others were favorable to any candidate friendly to prohibition. Senator Simmons took strong adverse ground to the Smith nomination, on prohibition grounds, and advocated Smith's defeat. Religious sentiment among the inhabitants of the State as well as prohibition principles rendered Governor Smith unacceptable. The regular Democrats made an appeal to party loyalty, and a large Democratic vote was actually cast. Party defection did not extend to the State ticket. O. Max Gardner, Democratic nominee, was elected Governor. The popular vote for President was: Hoover (Rep.), 348,923; Smith (Dem.), 286,227.

OFFICERS. Governor, Angus Wilton McLean; Lieutenant-Governor, J. Elmer Long; Secretary of State, J. A. Hartness; State Treasurer, B. R. Lacy; Auditor, Baxter Durham; Attorney-General, Dennis G. Brummitt; Superintendent of Public Instruction, A. T. Allen.

JUDICIARY. Supreme Court: Chief Justice Walter P. Stacy; Associate Justices, W. J. Adams, Heriot Clarkson, George W. Connor, W. J. Brogden.

NORTH CAROLINA, UNIVERSITY OF. A State institution for the higher education of men, at Chapel Hill, N. C., founded in 1795. The enrollment in the autumn of 1928 was 2504 regular students, with 3514 in extension courses. There were 2019 registered for the summer session. The faculty had 215 members. The productive funds of the institution amounted to \$2,232,575, and the annual income to \$1,254,400. The library contained 200,000 volumes. President, Harry Woodburn Chase, Ph.D., LL.D.

NORTH CENTRAL, formerly NORTHWESTERN, COLLEGE. A coeducational institution of higher learning at Naperville, Ill., founded in 1861. In the autumn of 1928 there was an enrollment of 597 students, of whom 323 were men and 274 women. There were 41 members on the faculty. The productive funds of the college amounted to \$723,000, and the current income for the year was \$137,600. The library contained 15,000 volumes. In 1927, Kaufman Hall, a new dormitory, with rooms for 45 young women and dining-room accommodations for 145, was erected in 1927, at a cost of \$84,000, the gift of Mr. and Mrs. Jacob Kaufman, of Kitchener, Ontario, and of Mr. and Mrs. Henry Pfeiffer of New York. President, Edward Everett Rall, Ph.D.

NORTH DAKOTA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 646,872. On July 1, 1925, it was 641,192, according to the census taken by the State. No estimate of the population of the State was made in 1928. The capital is Bismarck.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Wheat	1928	10,367,000	142,923,000	\$115,469,000
	1927	10,246,000	130,191,000	133,745,000
Hay	1928	2,273,000	3,346,000 "	20,657,000
	1927	2,400,000	3,644,000 "	23,833,000
Barley	1928	2,179,000	55,654,000	23,893,000
	1927	1,663,000	42,406,000	25,020,000
Flaxseed	1928	1,148,000	8,115,000	16,311,000
	1927	1,242,000	10,184,000	18,739,000
Corn	1928	997,000	24,426,000	14,900,000
	1927	959,000	23,975,000	14,864,000
Oats	1928	1,934,000	59,954,000	17,986,000
	1927	2,125,000	45,688,000	15,991,000
Rye	1928	1,271,000	12,710,000	9,660,000
	1927	1,381,000	23,063,000	18,450,000
Potatoes	1928	141,000	14,805,000	4,442,000
	1927	113,000	11,526,000	5,763,000

" tons.

MINERAL PRODUCTION. Coal was mined in the State in 1927 to the quantity of 1,485,000 short tons, as against 1,370,244 in 1926, the product of 1926 having a value of \$2,378,000. Sand and gravel to the value of \$240,525 and clay products to approximately \$150,000 formed almost all the remainder of the mineral production. The total value of the mineral products of the State was \$2,804,837 for 1926; for 1925, \$2,662,029.

FINANCE. State expenditure in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, was: for maintenance and operation of governmental departments, \$8,427,548 (of which \$1,490,788 was aid to local education); for conducting public service enterprises, \$5,235,518 (spent chiefly in mill and elevator operations); for interest on debt, \$1,632,457; for permanent improvements, \$3,792,278; total, \$19,087,801 (of which \$4,393,811 was for highways, \$691,371 being for maintenance and \$3,702,440 for construction). Revenues were \$19,428,280. Of this, property and special taxes formed 23.3 per cent; departmental earnings and charges for officials' services, 7.5; sales of licenses and taxation on gasoline, 13.7. Property valuation was \$998,180,492; State taxation thereon, \$3,842,995. Net State funded debt on June 30, 1927, was \$4,519,097.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 5273.68. No new construction of railroad mileage in 1928 was reported.

EDUCATION. A course of study for elementary schools was prepared in 1928, in accordance with the Stratmeyer-Burner report, and with allowance for the time element and grade conditions in rural schools. The total number of persons of school age at the end of the academic year 1926-27 was placed at 217,936. There were enrolled in the public schools of the State 171,498 pupils, of whom 146,999 were in elementary schools and 24,499 in high schools. The expenditures (1927) for public-school education totaled \$17,474,309. Salaries of teachers averaged \$109.88 a month.

CHARITIES AND CORRECTIONS. As operating in 1928, the Board of Administration, created in 1919, exerted control over the State institutions for the care or custody of persons, as well as the State university and eight other State schools of higher learning. The welfare institutions of the State were: School for the Deaf, Devil's Lake; School for the Blind, Bathgate; Tuberculosis Sanatorium, Dunkeith; Institution for the Feeble-Minded, Grafton; Hospital for the Insane, Jamestown; State Training School, Mandan;

State Penitentiary, Bismarck; The State Hospital at Jamestown had on Jan. 1, 1928, 1444 mental patients. Feeble-minded and epileptics in State care numbered 520.

POLITICAL AND OTHER EVENTS. A petition of some 23,000 signatures was presented to the Secretary of State in February, demanding that the portion of the State constitution providing alcoholic Prohibition be brought up for repeal before a popular referendum vote. The referendum on this proposal, held June 26, resulted in the maintenance of State prohibition, by a small majority. North Dakota had inserted the prohibition clause in its original constitution in 1889, and had always retained it; the June vote for repeal was 4789 less than that for retaining the clause, as compared with a majority of 8717 in the year 1916, against the repeal of the State prohibition enforcement law. In July was filed an initiative petition to submit to the voters at the November election a proposal that the State issue bonds to a total of \$25,000,000 to reimburse the depositors of State banks that had failed, between the dates of Jan. 1, 1919, and May 15, 1928. It was estimated that more than 80,000 depositors had lost by such failures. A great experiment in State ownership and operation, the State mill and elevator at Grand Forks, was reported to have lost \$37,516 in the two opening months of 1928 on its operations, and to have incurred up to the end of February a total operating loss of \$1,463,208. Plans were reported as formed by the Montana-Dakota Power Company to extend a natural-gas pipe line across the State from Montana to carry gas to the communities along the eastern border.

ELECTION. The National campaign in North Dakota centred largely about the effort to win the voting element that had cast its ballot for La Follette on the Progressive ticket in 1924. The failure of Governor Smith, the Democratic presidential candidate, to capture this vote led to the victory of the Republican National candidates, Hoover and Curtis, by a considerable majority. The popular vote for President was: Hoover (Rep.), 131,441; Smith (Dem.), 106,648. United States Senator Lynn J. Frazier, running on the Republican ticket, was reelected, as were the three Representatives of the State, all Republican. George F. Shafer, Republican, was elected governor.

OFFICERS. Governor, A. G. Sorlie; Lieutenant-Governor, Walter Maddock; Secretary of State, Robert Byrne; State Treasurer, C. A. Fisher; Auditor, John Steen; Attorney-General, George F. Shafer; Superintendent of Public Instruction, Bertha R. Palmer.

JUDICIARY. Supreme Court: Chief Justice, W. L. Nussle; Associate Justices: Luther E. Birdzell; A. M. Christianson, A. G. Burr, John Burke.

NORTH DAKOTA, UNIVERSITY OF. A State institution of higher education at University Station, Grand Forks, N. D., founded in 1883. The enrollment for the autumn of 1928 was 1650, of whom 1025 were men and 625 women. This number was distributed as follows: Graduate, 40; liberal arts, 705; commerce, 127; education, 384; engineering, 185; law, 62; medicine, 56; and high school, 61. For the summer session of 1928 the total registration was 348, of whom 159 were men, and 189 women. The faculty numbered 139. The productive funds totaled \$1,700,-

000 and the income for the year, \$857,800 (exclusive of boarding department and trust funds), from the following sources: Federal land funds, \$65,000; student fees and rent \$60,000; other local income, \$15,600; State appropriation for maintenance, \$415,900; State appropriation for buildings and improvements, \$280,000; and State appropriation for public service, \$21,300. The general University library contained 95,215 volumes. President, Thomas F. Kane, Ph.D., LL.D.

NORTHERN LAND. Although it was popularly spoken of as Lenin Land, Nicholas II Land has been officially renamed Northern Land by the Soviet Government. Located in Lat. 79°N. and Long. 103°E. to the north of Cape Chelyuskin, it is separated from this northernmost extension of Asia by a strait of 32 nautical miles. It was discovered by the Russian Hydrographical Expedition to the Arctic, 1912-1915, and its east and south coasts were then mapped. Press reports announced that the ill-fated *Italia* Expedition reached Northern Land on the second flight and found no land, but until the scientific results are published it is impossible to tell whether or not this expedition has made any contribution to the knowledge of Northern Land.

NORTHERN TERRITORY. A territory belonging to the Commonwealth of Australia, situated in the central and northern part of the island continent; transferred to the Commonwealth, Jan. 1, 1911; divided for administrative purposes into two territories, North Australia and Central Australia on Mar. 1, 1927. Area, 523,620 square miles; population, according to the census of 1921, exclusive of aborigines, 3867; estimated in 1927, 4085. The Aborigines are estimated to number about 20,000. Principal town, Darwin, on the Harbor of Port Darwin. While the soil is capable of a varied production of crops of tropical and semi-tropical zones, agriculture has not been developed chiefly because the climate is unsuitable for Europeans. Down to June, 1926, the total value of all minerals produced was £3,419,505. The imports in 1925-26 were £34,168; exports, £35,902; revenue, £97,298; expenditure, £382,268; debt, £2,193,496. Government Resident for North Australia, R. H. Weddell; for Central Australia, J. C. Ca-wood.

NORTHWESTERN UNIVERSITY. A co-educational institution of higher education at Evanston and Chicago, Ill.; founded in 1851. It is composed of the college of liberal arts, the graduate school, the school of engineering, and schools of commerce, journalism, music, education, and speech, in Evanston; and the schools of law, medicine, dentistry, commerce, and journalism, in Chicago. For the autumn term of 1928 there was an enrollment of 11,105, of whom 5,424 were registered in the school of commerce in Chicago. For the summer session of 1928, 2115 students were enrolled. The faculty of the University numbered 742. The endowment, as of June 30, 1928, was \$15,940,876, and the income from these funds for the fiscal year 1927-28 was \$816,852. In the various libraries of the university there were approximately 280,000 bound volumes and 150,000 pamphlets. President, Walter Dill Scott, Ph.D., LL.D.

NORTHWEST PROVINCES. The Prairie Provinces of Canada. See CANADA.

NORTHWEST TERRITORIES. The term applied to the large tract in Canada to the east

of the Yukon Territory, stretching northward to the Arctic from the Prairie Provinces and westward to the north of Hudson Bay and Hudson Strait; comprising the territories formerly known as Rupert's Land and the Northwestern Territory, excepting those portions which form the provinces of Manitoba, Saskatchewan, Alberta, and the Yukon Territory. Area, 1,309,682 square miles; population, according to the census of 1921, 7988. They are under the administration of the Northwest mounted police, directed by a commissioner at Ottawa, aided by a deputy commissioner, and a council of five. Commissioner, William Wallace Cory.

NORWAY. A constitutional monarchy of northwestern Europe, occupying the western and northern half of the Scandinavian peninsula and separated from Sweden by the Kjölen Mountains, with an extreme length of 1110, and an extreme width of 250, miles; formerly united with Sweden, but separated, June 7, 1905. Capital, Oslo.

AREA AND POPULATION. The area is 124,964 square miles and the population according to the census of 1920, 2,649,775, of whom 1,864,371 lived in rural districts. The capital, Oslo, had a population of 258,483 on Dec. 1, 1920. Other large cities with their populations in 1920: Bergen, 91,443; Trondhjem, 55,030; and Stavanger, 43,778. Before Jan. 1, 1925, the capital, Oslo, was called Christiania. The movement of population in 1926 was: Births, 54,692; deaths, 29,593; marriages, 15,836; emigration, 9326, of whom 6497 went to the United States and 2570 to Canada.

EDUCATION. Primary education is compulsory, the school age being from $6\frac{1}{2}$ to 14 years in urban districts and 7 to 14 years in rural districts. During 1925-26 the number of pupils in elementary schools was 396,127 and in secondary schools, 28,784. There is only one university, that at Oslo, which had 3250 students in 1926.

PRODUCTION, ETC. About 75 per cent of the area of Norway is unproductive, and forests are the principal resource of the remainder. In 1926 the area of arable land was 1,671,000 acres or 2.2 per cent of the total land area; there were 622,000 acres of permanent meadows, and 18,531,000 acres of forests. In 1927 there were 1,209,000 cattle, 300,000 swine, 1,608,000 sheep, 290,000 goats, and 183,000 horses. The acreage and production of the principal crops in 1927 were as follows: Wheat, 22,000 acres, 563,000 bushels; rye, 23,000 acres, 634,000 bushels; barley, 143,000 acres, 4,747,000 bushels; oats, 241,000 acres, 12,169,000 bushels; mixed grain, 16,000 acres, 12,000 metric tons; potatoes, 123,000 acres, 22,232,000 bushels; hay (1926), 1,025,000 acres, 2,486,000 metric tons.

The fishing industry is one of the most important in Norway, and 100,000,000 codfish is the annual average catch, besides large quantities of herring and other fish. Through excellent packing methods, the industry has developed a market in the principal countries for its canned fish, and the making of fish product specialties has been undertaken. Whaling was unusually profitable during 1928, oil production having increased to 745,000 barrels from 660,000 barrels in 1927.

The forest industries have always formed a very important branch of Norwegian economic life, with wood products holding first place among exports. The normal annual export of lumber amounts to about 1,000,000 cubic meters. The

export of pulp, mechanical and chemical, has been maintained at an annual level of about 730,000 metric tons, while newsprint exports have shown a steady gain from 98,000 metric tons in 1913 to 221,000 metric tons in 1927. Iron pyrite is the most important mineral product for both its sulphur and copper content. In 1926 the total value of mineral production was \$5,131,000 and the total value of metal production \$18,127,000. There were 10,512 manufacturing establishments employing 136,437 workers.

COMMERCE. According to the *Commerce Year Book* for 1928, the Norwegian imports in 1927 were valued at \$256,232,000 and exports at \$175,936,000. In crown values (krone at par, \$0.2680) the imports were 983,807,000 crowns and exports 675,379,000 crowns. Imports showed a decrease from 1926 in terms of crowns of 10 per cent, while exports fell off by 15 per cent. On account of the enhancement in the exchange value of the crown, however, imports in terms of dollars showed an increase of 5 per cent while exports declined very slightly. As compared with 1926, there was a decided decline in quantity in the importation of meats, animal fats, and copra, and a considerable increase in the imports of corn, mineral oils, and coal. The values of individual imports and exports for 1927 were not available. The most conspicuous changes in the export trade were a marked quantitative decline in whale and other marine-animal fats, planed lumber, and saltpetre, and a large increase in newsprint paper. The export of fish in bulk was somewhat less than in 1926 but greater than in 1925. The quantity of canned fish exported was a little greater than in 1926 and over one-fourth larger than in 1925.

The position temporarily held by Germany in 1926 as the principal source of Norwegian imports was lost in 1927 and the usual order of countries of origin was reestablished with Great Britain leading, Germany second, and the United States third. Great Britain maintained its position as the leading market for Norwegian exports, but Germany replaced the United States in the second position.

FINANCE. The following table from the above-mentioned source gives the actual receipts and expenditures for 1926-27 and the estimates for the 1927-28 budget:

GOVERNMENT RECEIPTS AND EXPENDITURES
[Thousands of Kroner]

	1926-27, actual	1927-28, budget
Receipts	398,822	413,100
Taxes and customs	311,670	329,735
State railways (net)	1,471 ^a	5,688
Post and telegraphs (net)	6,223	43,159
All other ordinary	44,938	37,487
Capital receipts	37,487	413,100
Expenditures	405,770	112,293
Finance and customs	112,293	48,335
National defense	48,335	46,714
Public welfare	46,714	63,632
Public instruction	63,632	87,507
All other ordinary	87,507	47,289
Capital expenditures	47,289	106,884
Equivalent (\$1000) at par:		
Receipts	106,884	110,711
Expenditures	108,746	110,711

^a Deficit.

The total indebtedness of Norway on July 1, 1928, according to official statistics, amounted to 3,384,700,000 crowns, of which the debt of the National Government accounted for 1,524,600,000 crowns. The municipal debt, including loans for

municipal hydro-electric plants, totaled 873,500,000 crowns; official banks, 590,800,000 crowns; other banks, 17,700,000 crowns; credit associations, 64,000,000 crowns; shipping companies, 12,700,000 crowns; street-car companies, 29,500,000 crowns; and industrial companies, 271,900,000 crowns. The outstanding financial event of 1928 was the stabilization on May 1 of the Norwegian currency at par on a gold basis.

COMMUNICATIONS. Norway has long enjoyed the distinction of possessing the greatest per capita marine tonnage in the world. Although Norwegian shipping suffered relatively greater loss of tonnage during the War than that of any other country, having lost over 49 per cent of its entire merchant marine, by the end of 1927 the total tonnage, at 2,943,000 gross tons, was nearly 300,000 tons greater than in 1914. The gross revenue from shipping of about \$115,000,000 in 1927, partly makes up for the adverse balance of trade of the country. In 1926, 8150 vessels of 5,984,000 net registered tons entered the ports of Norway and 8235 vessels of 5,989,000 tons cleared.

The total length of railway line in 1927 was 2254 miles of which 2025 were state and 229 private lines. In the same year there were 627 locomotives, 1187 passenger cars, 13,344 freight cars (1926), 22,069,000 passengers were carried, 9,802,000 metric tons of freight were handled, and the gross receipts were 91,369,000 crowns.

GOVERNMENT. Executive power is vested in the King, who acts through a cabinet or council of state, and legislative power in the Parliament or Storting of 150 members, elected for three years by universal suffrage without distinction as to sex. As a result of the elections held in November, 1927, the following parties were elected for the period 1928-30: Labor party, 59; Conservatives and Moderate Liberals, 31; Liberals, 31; Agricultural party, 26; Communists, 3. The King in 1928 was Haakon VII (born Aug. 3, 1872; elected King Nov. 18, 1905). The members of the cabinet appointed Feb. 13, 1928, were as follows: Prime Minister and Foreign Affairs, J. L. Mowinkel; Education and Ecclesiastical Affairs, S. M. Hasund; Justice, H. M. Evjenth; Agriculture, H. J. Aarstad; Public Works, O. M. Mjelde; Social Affairs, T. Vaerland; Finance, P. Lund; Defense, T. Anderssen-Rysst; Commerce and Industry, L. Oftedal.

HISTORY. As a result of the election held in November, 1927, the Conservative party lost considerable ground in the Storting. As a result, the Lykke cabinet resigned and the King requested the leader of the Agriculturists, M. Mellbye, to form a government. When he failed to do so, the King turned to the Labor group, the largest single party in the legislature. M. Hornsrud, the leader of this party, succeeded in forming a cabinet on January 26, but it lasted scarcely two weeks, when it fell on the question of a vote of confidence. On February 13, the cabinet mentioned above under *Government* came into power. M. Mowinkel, the new Prime Minister, had served in that capacity for a short time in 1924.

For a discussion of literary activity and the celebration of the Ibsen Centenary in Norway, see article, **SCANDINAVIAN LITERATURE.**

NORWEGIAN LITERATURE. See **SCANDINAVIAN LITERATURE.**

NOTRE DAME, UNIVERSITY OF. A Roman Catholic institution for the higher education of

men at Notre Dame, Ind., founded in 1842. The enrollment for the autumn term of 1928 was 2991, which represented an increase of 141 over 1927-28. The summer session enrollment was 1023. The faculty numbered 160, of whom 20 were new members. The library contained approximately 200,000 volumes. President, the Rev. Charles L. O'Donnell, C.S.C., Ph.D.

NOVA SCOTIA, nō'vā skō'shā. One of the Maritime Provinces of Canada. Area, 21,428 square miles; population, according to the census of 1921, 523,837. Capital, Halifax, with a population in 1921 of 53,372. Other large towns: Sydney, 22,545; Glace Bay, 17,007; Amherst, 9998; Dartmouth, 7899; New Glasgow, 8974; Sydney Mines, 8327; Truro, 7562; Yarmouth, 7093. In 1925 the movement of population was: Births, 11,400; deaths, 6045; marriages, 2922. Education is free, compulsory, and undenominational. There are four universities and 3089 schools, with 3320 teachers and 112,391 pupils. In the technical schools there were 4601 pupils. Nova Scotia is largely an agricultural and fruit-growing country. The chief product is apples, the output of which, in 1926 was about 850,000 barrels. The output of the chief minerals in 1926 was: Coal, 5,652,314 long tons; pig iron, 294,054 tons; coke 453,228 short tons; and small quantities of steel ingots, limestone, and dolomite. Nearly 24,000 men are employed in the fisheries, which, next to British Columbia, are the most extensive in Canada. The total market value of fish caught in 1926 was \$11,750,000. The imports for consumption in 1926 were valued at \$21,367,022, and the exports at \$50,496,594. There are 1451 miles of railway.

Executive power is vested in a lieutenant-governor appointed by the Dominion Government of Canada for five years, who acts through a responsible ministry or council; and legislative power in a council of 21 members appointed for life by the Crown, and an assembly of 43 members. The province is represented in the Dominion Senate by 10 members and in the House of Commons by 16. Lieutenant-Governor in 1928, James C. Tory; Premier, Provincial Secretary, and Treasurer, E. N. Rhodes; Public Works and Mines, Col. G. S. Harrington; Attorney-General, W. L. Hall; Highways, P. C. Black; Natural Resources, J. A. Walker; Ministers without portfolios, Dr. Le Blanc, J. F. Fraser, and W. N. Rehfuss.

NOVAYA ZEMLYA, (No'va Zem'bla). The Soviet government renewed its activities in the archipelago of Novaya Zemlya. On June 30, 1924, it issued a decree centralizing its interests in the arctic islands to the north of European Russia. It appointed a commissioner who, from his headquarters at Archangel, supervises the affairs of these islands, of which the most important are the north and south islands of Novaya Zemlya, Kolguev and Waigatch.

NUTRITION. See **FOOD AND NUTRITION.**

NUTS. See **HORTICULTURE.**

NYASALAND, or **NYASSALAND, PROTECTORATE.** A British protectorate, formerly known as British Central Africa; situated on the southern and western shore of Lake Nyassa, extending northward to the Zambesi River. Area, 37,890 square miles; population in 1926, 1650 Europeans, 850 Asiatics, and 1,290,885 natives. The chief towns are Blantyre and Zomba, the seat of the Government, Education is in the hands of foreign missionary societies, under

which there were in 1926: 2702 schools, with 195 European teachers, 179,053 pupils enrolled and an average attendance of 115,240. Among the chief products are tobacco, coffee, cotton, tea, and livestock. The imports in 1926-27 were valued at £791,054; and exports at £671,086. The chief articles of export are tobacco, cotton, fibres, corn, and tea; of import, manufactures of cotton, provisions, and raw materials. Great Britain supplied more than half of the imports. Revenue for 1926-27 was estimated at £348,320 and expenditures at £318,899. The administration is under a commander-in-chief, aided by an executive and legislative council, composed of nominated members. Governor and Commander-in-Chief in 1928, Sir C. C. Bowring.

OATS. The production of oats in 1928 of 29 countries reporting to the International Institute of Agriculture, Rome, was estimated at 4,670,800,000 bushels, an increase of 12.8 per cent over the production of 1927 and 13.4 per cent above the average for the five-year period 1922-26. The acreage in these countries was 136,959,000 acres, which was 1.1 per cent below the acreage of 1927 but 5.2 per cent above the average acreage of the five-year period. Production in 1928 of the leading oats producing countries outside the United States was reported as follows: United Socialist Soviet Republics, 1,109,197,000 bushels; Canada, 503,882,000 bushels; Germany, 426,000,000 bushels; France, 336,257,000 bushels; Poland, 261,119,000 bushels; and England and Wales, 97,510,000 bushels. Argentina, the leading oats-growing country of South America, reported a yield of 52,291,000 bushels for the crop year 1927-28.

According to estimates published by the U. S. Department of Agriculture, the United States, in 1928, produced 1,449,531,000 bushels and stood first in yield among the countries of the world. The production in 1927 was 1,182,594,000 bushels. The area devoted to the crop was 41,733,000 acres in 1928 and 41,941,000 acres in 1927, and the average yield per acre for the two years was 34.7 bushels and 28.2 bushels, respectively. The average yield per acre in 1928 was 2.9 bushels above the average yield per acre for the preceding ten years. On Dec. 1, 1928, the average farm price was 40.9 cents per bushel and on this basis the total value of the crop amounted to \$592,674,000, as compared with a total value of \$531,762,000 for the preceding crop on a corresponding basis of 45 cents per bushel.

Oats were grown in all the States and the production in the leading ones was reported as follows: Iowa 240,040,000 bushels, Illinois 174,338,000 bushels, Minnesota 153,338,000 bushels, Wisconsin 108,532,000 bushels, Indiana 93,684,000 bushels, Ohio 89,281,000 bushels, and Nebraska 78,936,000 bushels. The average yield per acre ranged from 17.4 bushels in Florida to 47 bushels in Idaho and Washington. The average farm price on Dec. 1, 1928, ranged from 30 cents in North Dakota to 88 cents in Florida and South Carolina.

During the year ended June 30, 1928, the United States exported 6,034,000 bushels of oats and 68,192,000 pounds of oatmeal and imported 202,000 bushels in the form of grain. The results of a study made by the Department of Agriculture indicated that the average cost of growing an acre of oats varied from \$17.40 in 1922 to \$19.01 in 1927. The average cost per bushel varied from 50 to 54 cents during the six years, 1922-27.

With relatively low yields in the South Central States in 1927, the cost of production per bushel rose 20 cents, while with relatively high yields in the Western States it fell 10 cents as compared with the cost in 1926.

OBERLIN COLLEGE. A non-sectarian institution for the higher education of men and women at Oberlin, Ohio, founded in 1833. The registration for the first semester of 1928-29 was 1617, while that of the summer session of 1928 was 185. In 1927-28 the faculty had 248 members. The productive funds of the institution as of Aug. 31, 1928, amounted to \$16,278,714, and the income for the year was \$1,444,515. The library contained 299,179 bound, and 200,429 unbound, volumes. President, Ernest Hatch Wilkins, Ph.D., Litt.D., LL.D.

OBITUARY RECORD OF THE YEAR. See NECROLOGY.

OBREGON, ó'brá-gōn', ALVARO. Mexican soldier and statesman, assassinated at San Angel, Mex., July 17. He was born in the District of Alamos, Sonora, Mex., Feb. 17, 1880. His early life was spent on a *hacienda*, or plantation, and he evinced considerable ability in mechanics and invention. He was a successful planter in 1912 when he began his career as a soldier and statesman by enlisting in the cause of Francisco I. Madero, who had revolted against Diaz and was in turn menaced by the uprising of Orozco. Obregon recruited and equipped a force of 400 Yaqui Indians and took the field as their commander in a brilliant campaign in Sonora and Chihuahua which forced Orozco to flee to the United States. After the suppression of the Orozco revolt, Obregon returned to his agricultural life, but in 1913 he joined Venustiano Carranza in his opposition to Victoriano Huerta, who had become provisional President of Mexico after deserting Madero for the rebels. Madero was executed, Feb. 23, 1913. Obregon displayed his military skill again in his warfare on the Federalists, winning the battle of Santa Rosa in June, 1913, and being advanced to the rank of general. In 1914 he was commander of the Constitutional Army of the West. His successful storming of Sinaloa and Culiacán, and the capture of Guadalajara (July 9) served to open the way for the advance of Carranza on Mexico City, and on Aug. 15, 1914, General Obregon led the Constitutionalist forces into the capital. Huerta had resigned as President and had fled.

Four factions then contended for supremacy in Mexico, with Zapata and Villa as chief opponents of Carranza. Obregon remained faithful to Carranza and defeated Zapata in Puebla early in 1915, capturing the city. He reoccupied Mexico City after the departure of the forces of the Convention (Jan. 27, 1915), but evacuated the city again on March 10. During April, May, and June, 1915, Obregon undertook a campaign against Villa for the control of central Mexico. He repulsed the attacks of Villa at Celaya (April 15-19) and defeated his enemy in the battle of León (May 31-June 4), where Obregon was severely wounded, losing his right arm.

The subsequent period was one of constant turbulence in Mexican politics, accentuated by difficulties between Mexico and the United States that culminated in the occupation of Vera Cruz by American forces and Pershing's punitive expedition into northern Mexico in 1916 because of Villa's border raids. General Obregon was the chief supporter of President Carranza and was

the leader of the more radical of Carranza's followers. On Mar. 11, 1917, Carranza was elected President. From that time until the Spring of 1920, the time of the next constitutional presidential election, Obregon remained at the head of the army, with influence and power that steadily overshadowed the head of the Government. He was popular among the soldiers, and was also favored by the radicals and by foreign interests; the latter believed that he would be more amenable than other Mexican leaders in regard to enforcing the provisions of the new Mexican constitution that were distasteful to them. By this constitution, that of 1917, Carranza could not obtain another term as President, but he put forward a candidate, held to be only a stalking horse for himself. Obregon put himself in opposition and Carranza ordered his arrest, but the former hurried to Sonora and placed himself at the head of a revolt. After the capture of Vera Cruz by the enemies of Carranza, the President fled and met death—by suicide, according to report, but doubtless by assassination, in the general belief. On May 24, 1920, the Mexican Congress chose Adolfo de la Huerta as provisional President, and in September Obregon was elected President with only nominal opposition. He took office Dec. 1, 1920. He served out his four-year term, marked by efforts at labor and agrarian reforms, and by increasingly improved relations with the United States on various subjects in controversy between the two countries, especially debt funding and the mineral and oil concessions. The United States formally recognized the Obregon government on Aug. 31, 1923. In the following year President Obregon, debarred from reelection by the 1917 constitution, put forward General Plutarco Calles, his minister of the interior, as a candidate. Calles was elected, but not before Obregon was called upon to put down by force a serious revolt led by Adolfo de la Huerta, then finance minister. In this Obregon was aided materially by the support of Washington, which sent arms and ammunition to the Obregonistas and refused them to the rebels.

During Calles's administration, marked by troubles with the United States and the Roman Catholic Church, it was held generally that Obregon was a very influential factor, and when the term of the former neared its end, Obregon was again nominated for the Presidency. He was elected July 1, 1928, and was assassinated sixteen days later by a young man who shot him at a luncheon party given in celebration of his election. See MEXICO under *History*.

O'BRIEN, WILLIAM. Irish journalist and parliamentary leader, died at London, England, February 25. He was born at Mallow, Ireland, Oct. 2, 1852, and was educated at the Cloyne Diocesan College and Queen's College, Cork. At an early age he was employed by the *Daily Herald*, of Cork, but his real start in journalism was made in 1875, as a member of the staff of the *Freeman's Journal*. In 1880 he founded *United Ireland*, one of the most militant of Irish newspapers. O'Brien's activity with pen and voice brought him nine times into court for political offenses and cost him two years' imprisonment. He shared his captivity with Parnell and other Land League leaders. At Parnell's request, O'Brien wrote the famous "No Rent Manifesto." In 1883 he was returned to Parliament for Mallow, his native town, and until 1895

he was one of the leaders of the Irish cause at Westminster. From 1887 to 1890 he was a dominant figure in Irish Nationalism. Five years later, however, he withdrew from Parliament because of dissensions in his party.

In 1890 O'Brien visited the United States and collected large funds for the benefit of the Irish cause. After Parnell's conviction he became one of the leaders of the anti-Parnell faction. In 1898 he originated a new agrarian movement under the name of the United Irish League, and founded the *Irish People* as its organ. He was again a member of Parliament for Cork City after 1900, and retired finally in 1918 to live quietly at Mallow. O'Brien was called by Parnell the most scholarly man and one of the ablest debaters of the Irish party. Although modest and retiring in disposition, and of medium height and scholarly appearance, in politics he was always a storm centre and a hard fighter. He wrote two novels, *When We Were Boys* (1890), a story (written in prison) of the Fenian movement, and *A Queen of Men* (1897), dealing with Grace O'Malley, a heroine of ancient Ireland. He wrote also *Recollections* (1905), which was highly praised by critics; *An Olive Branch in Ireland and Its History* (1910); *Evening Memories* (1920); *The Irish Revolution and How It Came About* (1923); *Edmund Burke as an Irishman* (1924), and *The Parnell of Real Life* (1926).

OCEANIA, ō'shē-ān'īā, FRENCH ESTABLISHMENTS IN. A French colonial possession consisting of groups of small islands scattered throughout a wide area of the eastern Pacific. The total area of the establishments is estimated at 1520 square miles; population in 1926, 35,862, of whom 29,644 were natives. The principal island is Tahiti, which contains the chief town, Papeete, with a population of 4601, of whom 2126 are Frenchmen. The group of islands of which Tahiti forms a part is known as the Society Islands. The other groups are the Marquesas Islands, Tuamotu Island, Leeward Islands, the Gambier, Tubuai, and Rapa groups, and a number of outlying islands. Various tropical fruits are grown and exported. Pearls and mother-of-pearl are important products. Imports in 1926, 49,943,864 francs; exports, 53,650,477 francs. The chief imports are tissues, wheat, flour, and metal work, and the chief exports, copra, mother-of-pearl, vanilla, coconuts, and phosphates. The local budget for 1927 was expected to balance at 15,167,573 francs. The most important islands communicate by a New Zealand steamship service with San Francisco, New Zealand, and Australia. The administration is in the hands of a governor assisted by an administrative council. See EXPLORATION.

OCEANS, OCEANOGRAPHY. See EXPLORATIONS.
OFFICERS' RESERVE CORPS. See MILITARY PROGRESS.

O'GRADY, STANDISH HAYES. Irish author, died May 18. Born at Castletown Berehaven, County Cork, Sept. 18, 1846, he attended Trinity College, Dublin, where he won scholastic honors, and received the B.L. degree. Although admitted to the bar, he entered journalism and, later devoting himself to literature, wrote Irish histories and novels, and mythological and legendary Celtic tales. His work has been valued as an important stimulus to the national literature of the nineteenth century, which, written in the English language, took the place of the Gaelic, and en-

riched the style and mood of English literature. Besides editing, with Sir G. Carew, *Pacata Hibernia* (1896), Mr. O'Grady wrote: *History of Ireland's Heroic Period* (2 vols., 1878-80), republished as a romantic trilogy under the titles: *The Coming of Cuculain*; *In the Gates of the North*; *Triumph and Death of Cuculain*. Other of his books were: *History of Ireland, Critical and Philosophical* (vol. i, 1881); *Red Hugh's Captivity* (1889); *The Bog of Stars* (1893); *The Story of Ireland* (1894); *Ulrick the Ready* (1896); *The Flight of the Eagle*; *Finn and His Companions*; *Lost on Du-Corrig*; *The Chain of Gold*; and *The Coming of Cuculain Cycle*, 3 vols. See PHIOLOGY, MODERN, under Celtic.

OHIO. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 5,759,394. The estimated population on July 1, 1928, was 6,826,000. The capital is Columbus.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Corn	1928	3,646,000	136,725,000	\$103,911,000
	1927	3,378,000	109,720,000	84,484,000
Hay	1928	2,787,000	3,706,000	43,339,000
	1927	3,144,000	5,159,000	47,460,000
Wheat	1928	842,000	9,475,000	12,888,000
	1927	1,615,000	29,068,000	36,335,000
Oats	1928	2,413,000	89,281,000	37,498,000
	1927	1,900,000	60,800,000	27,360,000
Potatoes	1928	128,000	12,054,000	9,040,000
	1927	118,000	12,180,000	14,616,000
Tobacco	1928	41,800	33,440,000	6,019,000
	1927	30,100	24,652,000	4,531,000
Barley	1928	333,000	9,191,000	5,515,000
	1927	155,000	4,185,000	3,013,000
Sugar beets	1928	38,000	281,000	"
	1927	37,000	325,000	2,272,000

^a tons, ^b pounds.

MINERAL PRODUCTION. The pig-iron production of the State continued second to that of Pennsylvania only. Shipments declined, in conformity with a general decrease in this industry, to 8,104,066 long tons for 1927, from 9,177,127 for 1926; the value of the pig iron shipped in 1927 was 150,125,790; for 1926, \$176,433,401. The mine output of coal fell sharply to 15,799,597 net tons for 1927, from 27,872,488 for 1926; in value it decreased to \$30,376,000 for 1927, from \$54,759,000. Labor troubles interfered with operation during much of the year. The coking industry suffered less, the by-product coke output being 7,129,000 short tons in 1927, as against 7,547,836 for 1926; in value, \$40,344,524 (1926). The clay products of 1926, the latest recorded year, were in value \$97,873,102; in 1925, \$97,991,821. In this field of production Ohio was again the leader among the States. The natural gas output of 1926 was 47,363,000 M cubic feet, surpassing that of 1925, which was 43,235,000 M cubic feet; the totals as to value were: 1926, \$25,403,000; 1925, \$22,377,000. In 1926, 10,817,000 gallons of gasoline were made from natural gas; in 1927 the quantity was 11,400,000 gallons. The value of this product was \$1,402,000 for 1926, and \$998,000 for 1927. Petroleum production rose from 7,272,000 barrels for 1926 to 7,529,000 for 1927; in value, however, the product fell from \$19,180,000 for 1926 to \$15,200,000 for 1927 (estimated). The cement produced in 1927 attained the quantity of 8,853,869 barrels, as compared with 7,556,493 for 1926; and cement shipments reached the value of \$14,242,901 for 1927 and for 1926, \$12,831,503. The

lime output was: 1927, 987,000 short tons (estimated); 1926, 1,056,589 short tons. In value it was: 1927, \$9,445,000 (estimated); 1926, \$10,348,880. The stone production was large in 1926, being to the value of \$13,763,207, as against \$13,084,572 in 1925. The total value of the mineral products of the State, duplications eliminated, was \$253,883,995 for 1926; for 1925, \$247,506,588.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, was: for maintenance and operation of governmental departments, \$41,843,672 (of which \$3,111,486 was aid to local education); for conducting public service enterprises, \$109,536; for interest on debt, \$976,174; for permanent improvements, \$10,912,780; total, \$53,842,162 (of which \$19,686,268 was for highways, \$13,176,744 being for maintenance and \$6,509,524 for construction). Revenues were \$53,627,085. Of this, property and special taxes formed 20.7 per cent; departmental earnings and charges for officials' services, 11.3; sales of licenses and taxation on gasoline, 47.6. Property valuation was \$13,350,444,355; State taxation thereon, \$3,337,611. Net funded State debt on Jun. 30, 1927, was \$19,127,835.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 8880.92. There were built in 1928, 11 miles of first, and 20.37 of second, track.

EDUCATION. An advance in teaching standards was accomplished in 1928, according to the statement of Director of Education J. L. Clifton in the *Journal of the National Education Association*, by the elimination of one-year teacher-training courses; the withdrawal from teacher training of colleges not making this work a major function was also effected. The school population of the academic year 1926-27 was given as 1,503,796. There were enrolled in the public schools of the State 1,266,565 pupils. Of these, 1,045,838 were in elementary schools and 220,727 in high schools. Expenditures for public-school education in the course of the year were: current, \$97,590,664; total including capital outlays, \$154,581,061. The salaries of teachers averaged approximately, as estimated, \$1450.

CHARITIES AND CORRECTIONS. A variety of correctional and charitable functions are vested in the State Department of Public Welfare, having at its head a single Director. The department was organized under a statute of 1921. Its duties in 1928 included the direction of 21 State institutions, the oversight of county homes, jails, and reformatories, and of child-caring agencies; the placement and guardianship of dependent children; hospital care of child cripples; administration of the pay-patient law; execution of State pardons and paroles, and supervision over the county probation system; identification and investigation of criminals and cases; various activities among the blind, and direction of the manufacture and sale of prison-made products, these being widely used among public offices and institutions in the State. For the year 1927 the number of inmates of all State institutions under the departments was 29,550. These institutions were: State hospitals at Athens, Cleveland, Columbus, Dayton, Lima, Massillon, Longview, and Toledo; Ohio Hospital for Epileptics; Institutions for the Feeble-minded, Columbus and Orient; Ohio State Sanatorium; Ohio Soldiers'

and Sailors' Home; Madison Home; a boys' and a girls' industrial school; Ohio Penitentiary; London Prison Farm; Ohio State Reformatory; Ohio Reformatory for Women; Bureau of Juvenile Research.

POLITICAL AND OTHER EVENTS. Senator Frank B. Willis, while on a campaign to gain the support of the Ohio Republican State delegation for his candidacy for the presidential nomination, died suddenly in Delaware, Ohio, his home town, on March 30. Lack of time prevented the substitution of another name for his on the primary ballots of the State. He received, posthumously, more than 70,000 votes in the Republican primary. Governor Donahey appointed as his successor to the Senate seat Cyrus Locher, a Democrat and State Commerce Director. Lieutenant-Governor Bloom became Commerce Director, and William G. Pickrel was appointed Lieutenant-Governor.

The upsetting of the Marshall law by the United States Supreme Court decision of 1927 having left the inferior tribunals of the State in a somewhat uncertain position, the Ohio State Bar Association at its July meeting declared in favor of the enactment of a law to create county courts, at the county seats, to handle misdemeanors and minor civil actions and to do away with the magistrates' courts. Chief Justice Marshall of the State Supreme Court declared that the State constitutional provision of 1912, limiting that court's power to pass on matters of constitutionality, had resulted in serious discrepancies in the interpretation of the law in different appellate districts.

Industrial conflict continued in the coal-mining regions of the State until late in the year, as in others of the soft-coal states of the unionized field. Evictions were enforced May 1, against several hundred miners who had been living as tenants in company-owned dwellings in Harrison, Belmont, and Jefferson counties. Defections in the ranks of the union adherents occurred in the Hocking Valley in April. Governor Donahey made efforts without avail to settle the coal wage differences. Following the action of the miners' policy committee in releasing districts to negotiate for themselves, late in July the Ohio Miners' Union sought to negotiate with the operators of the State, who in considerable numbers held out against entering into new collective bargaining. In the winter of 1927-28, State militia were used to administer emergency relief to striking miners' families. Near Crooksville, oil was struck in important quantities in April. The State fish and game division purchased deer with the purpose of propagating them as wild game under protection of the law, until they should grow numerous enough to hunt.

In Cleveland a proposal to amend the city charter so as to terminate government by city manager was advocated by Harry L. Davis, former governor and mayor. The plan would have restored government by mayor and council. It was submitted for the second time to popular vote, at a special election on April 24, and was defeated by an adverse majority of 2763 votes. City Manager Hopkins in July opposed the grant of higher rates sought by the East Ohio Gas Company seeking a new six-year charter. In Cincinnati the common pleas judges voted in January to adopt the chief justice system of organization, but after a brief trial reverted March 26 to a presiding justice. Plans were

worked out for the building of a union passenger station at Cincinnati, by the Cincinnati Terminal Company, to serve the seven principal railroads entering the city. Work was begun on the proposed station site, near Lincoln Park, in July, and the station was to be finished in 1932.

The Baltimore and Ohio Railroad effected an innovation in the steel industry of the Miami Valley by putting into operation a branch line from Hamilton to Middletown, specially reconstructed to carry trains of 150-ton ladle cars bearing molten iron from the Hamilton furnaces to the American Rolling Mill plant at Middletown. The conveying system was designed to eliminate the remelting of pig iron. Acquisitions of additional land increased the area of the Cincinnati municipal aviation field, Lunken Field, to 564 acres, making it according to report the largest such field in the country at the time. At Columbus, a City Hall building, in place of that destroyed by fire in 1921 and costing \$1,000,000, was completed, at Broad and Water streets. At Akron, the Board of Education voted to take over from the city the control of the Akron Public Library under the State school district library law, the board having authority to lay a tax for the support of the institution, for which municipal appropriations had been deemed inadequate.

ELECTION. In the election of November 6, after Pennsylvania, Ohio gave the second greatest majority of any State for the Republican National candidates, Hoover and Curtis. United States Senator Simeon D. Fess, Republican, was re-elected, defeating Charles V. Truax, Democrat. For the unexpired term, Theodore E. Burton, Republican, was elected to the Senate, defeating Graham P. Hunt, Democrat. For Governor, Myers Y. Cooper, the Republican candidate, was elected over Martin L. Davey, Democrat. John T. Brown, Republican, was elected Lieutenant-Governor. In the general sweep, the Republicans obtained every seat in the State senate and all but 11 of the seats in the lower house of the legislature. The three Democratic seats in the State's delegation in the House of Representatives were retained. The Ohio popular vote for Hoover was 1,627,543; for Smith, 864,210; Hoover's plurality, 763,333.

OFFICERS. Governor, A. V. Donahey; Lieutenant-Governor, William G. Pickrel; Secretary of State, Clarence J. Brown, Treasurer, Bert B. Buckley; Auditor, Joseph T. Tracy; Attorney-General, Edward C. Turner.

JUDICIARY. Supreme Court, Chief Justice, Carrington T. Marshall; Associate Justices, Reynolds R. Kinkade, James E. Robinson, Thomas A. Jones, Edward S. Matthias, Florence E. Allen, and Robert H. Day.

OHIO NORTHERN UNIVERSITY. An institution for the higher education of men and women at Ada, Ohio, founded in 1871, and under the direction of the Methodist Episcopal Church. It consists of the George Franklin and Sarah Catherine Getty College of Liberal Arts, colleges of education, engineering, and pharmacy, the Warren G. Harding College of Law, the A. D. Juilliard College of Music, school of commerce, and departments of expression, fine arts, and physical education. In the autumn of 1928 there were 1189 students registered, and in the summer school, 628. The faculty had 62 members. The productive funds of the institution amounted to \$42,860, and the income for the year to \$352,-

925. There were 15,000 volumes in the library. A new gymnasium and a music hall were constructed during the year. President, Albert Edwin Smith, Ph.D., D.D., LL.D.

OHIO RIVER CANALIZATION. See CANALS.

OHIO STATE UNIVERSITY. A State institution for the higher education of men and women at Columbus, Ohio, founded in 1870. The enrollment for the autumn term of 1928 totaled 10,412, distributed as follows: Graduate school, 844; agriculture, 793; applied optics, 30; liberal arts, 2429; arts-education, 107; commerce and administration, 1827; education, 1716; engineering, 1548; pharmacy, 188; veterinary medicine, 110; dentistry, 245; law, 297; medicine, 330; school of nursing, 31. There were, in addition, 3504 students registered in the summer quarter of 1928. The faculty in the autumn quarter had 883 members, an increase of 43 over 1927. The endowment amounted to \$1,150,914, and the income for the year to \$6,804,063, while total expenditures were \$6,556,662. The University also had current assets amounting to \$3,668,633, and the buildings and equipment were valued at \$15,896,897. The library contained 310,000 volumes. President, George W. Rightmire, LL.D.

OHIO UNIVERSITY. A State institution for the higher education of men and women at Athens, Ohio, founded in 1804. The student enrollment for the autumn term of 1928 was 2215, of whom 1109 were in the college of liberal arts, 775 of these being men and 334 women; in the college of education there were 1106 registered, 295 men, and 811 women. In the liberal arts the students were distributed as follows: 161 seniors, 175 juniors, 294 sophomores, and 422 freshmen, with 4 specials, 48 special music students, and 5 graduate students. The distribution in education was as follows: 130 seniors, 154 juniors, 304 sophomores, and 511 freshmen, 4 specials, and 3 graduate students. Of the registration of 1098 in 1928 summer session, 204 were men and 894 women. The faculty numbered 260. The library contained 63,900 bound volumes. President of the University, Elmer Burritt Bryan, L.H.D., LL.D.

OHIO WESLEYAN UNIVERSITY. An institution for the higher education of men and women at Delaware, Ohio, under the control of the Methodist Episcopal Church; founded in 1844. For the autumn semester of 1928 the total enrollment was 1803, distributed as follows: Seniors, 264; juniors, 377; sophomores, 465; freshmen, 611; special students, 16; conservatory, 45; graduate students, 25. The faculty numbered 163. The productive endowment of the University amounted to \$2,048,922, and the income for the year to \$607,344. The library contained more than 118,000 volumes. President, Edmund D. Soper, D.D., LL.D.

OIL. See CHEMISTRY, INDUSTRIAL; PETROLEUM.

OIL ENGINES. See INTERNAL COMBUSTION ENGINES; SHIPBUILDING.

OKLAHOMA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,028,283. The estimated population on July 1, 1928, was 2,426,000. The capital is Oklahoma City.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Cotton	1928	4,249,000	,000 ^a	\$101,480,000
	1927	3,601,000	1,037,000 ^c	102,663,000
Corn	1928	8,050,000	70,150,000	47,702,000
	1927	8,177,000	84,190,000	49,672,000
Wheat	1928	4,413,000	59,576,000	59,576,000
	1927	3,708,000	33,372,000	40,046,000
Grain sorghum	1928	1,709,000	30,762,000	19,072,000
	1927	1,744,000	34,880,000	17,440,000
Hay	1928	1,068,000	1,333,000 ^b	14,027,000
	1927	1,181,000	1,455,000 ^b	13,408,000
Oats	1928	890,000	23,140,000	10,876,000
	1927	1,112,000	21,128,000	9,296,000
Potatoes	1928	63,000	5,040,000	3,780,000
	1927	45,000	2,925,000	5,265,000
Sweet potatoes	1928	20,000	1,780,000	1,691,000
	1927	23,000	2,438,000	1,590,000

^a bales, ^b tons.

MINERAL PRODUCTION. The State exceeded every other in the quantity of petroleum that it produced in 1927 and in particular surpassed California, which had led in 1926. The petroleum produced in Oklahoma in 1927 attained 277,274,000 barrels, as against 179,195,000 in 1926. As rise in quantity was accompanied by a fall in price, it resulted that the value of the product fell to \$397,000,000 (estimated) for 1927, from \$413,900,000 for 1926. Natural gas output was high in 1926, the latest recorded year, reaching 286,421,000 M cubic feet, as against 249,285,000 M for 1925; in value, \$42,140,000 for 1926 and \$36,121,000 for 1925. Natural-gas gasoline was made to the quantity of 549,500,000 gallons in 1927, as compared with 475,716,000 in 1926; in value, \$28,904,000 for 1927 (estimated) and \$41,433,000 for 1926. Zinc mining, the chief other mineral activity, fell off sharply, the total mine production of zinc in 1927 being 206,611 short tons, as against 272,567 in 1926; zinc produced was valued at \$26,446,208 for 1927; at \$40,885,050 for 1926. The total value of the mineral products of the State attained the remarkable figure of \$569,518,693; for 1925 it was \$501,767,118. The coal production was 3,818,054 net tons in 1927 and 2,842,673 in 1926; in value, \$11,570,000 in 1927 and \$9,042,000 in 1926. The lead output of 1927 was 51,680 short tons; 1926, 69,704. In value it was \$6,511,680 for 1927; \$11,152,640 for 1926.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$17,250,096 (of which \$3,185,197 was aid to local education); for interest on debt, \$124,931; for permanent improvements, \$10,763,728; total, \$28,138,755 (of which \$11,472,648 was for highways, \$2,090,358 being for maintenance and \$9,382,282 for construction). Revenues were \$31,676,172. Of this, property and special taxes formed 9.8 per cent; departmental earnings and charge for officials' services, 7.0 per cent; sales of licenses and taxation of gasoline, 51.5 per cent. Property valuation was \$1,697,367,213; State taxation thereon, \$848,684. The net State funded debt amounted on June 30, 1927, to \$3,074,803.

EDUCATION. A programme was adopted in 1928 for the establishment of accredited elementary schools, according to State Superintendent Vaughan in the *Journal* of the National Education Association. Small high schools were reorganized in accordance with a particular type of curriculum designed for their needs. The effort was made to establish the 8-month term throughout the schools of the State, through

the measure to that end passed by the previous legislature.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 6601.51. There were built in 1928, 20 miles of additional first track.

CHARITIES AND CORRECTIONS. Oklahoma alone of the States of the Union has a commissioner of charities and corrections elected by popular vote, with power to appoint his subordinates. He is the head of a State department, performing a variety of functions. Among these are the investigation of public charities; the inspection of State, county, and municipal institutions; guardianship over orphan, defective, dependent, and delinquent children in all public institutions, and prosecution of suits at law on behalf of such children's estates. In 1927, 12,963 children came under the department in divers ways. During the year 1126 persons were admitted to State hospitals for mental disease, or 47.2 per 100,000 of general population. On Jan. 1, 1928, there were 3794 such patients. The State institutions in 1928 were: State Penitentiary, McAlester; State University Hospital, Oklahoma City; State Reformatory, Granite; State Industrial School for Girls, Tecumseh; State Industrial School for Colored Girls, Taft; Deaf, Blind, and Orphans' Home, Taft; State Training School for White Boys, Pauls Valley; State Training School for Colored Boys, Boley; State School for the Deaf, Sulphur; Oklahoma School for the Blind, Muskogee; State Institution for the Feeble-minded, Enid; Western Oklahoma State Tuberculosis Sanitarium, Clinton; State Tuberculosis Sanitarium, Tahleah; Soldiers' Tuberculosis Sanitarium, Sulphur; Union Soldiers' Home, Oklahoma City; Oklahoma Confederate Home, Ardmore; Central State Hospital for the Insane, Norman; Western Hospital for the Insane, Supply; Eastern Hospital for the Insane, Vinita; Whitaker State Orphans' Home, Pryor; West Oklahoma Home for White Children, Helena.

POLITICAL AND OTHER EVENTS. The corporation license fee fixed by the State law of 1927 was contested in the Federal courts, as discriminatory against foreign corporations, in that this law set the fee for a corporation license at one dollar per \$1000 for foreign capital invested in the State while charging only 5 cents per \$1000 for domestic corporations. Suit was brought in the Federal Court at Tulsa by members of the Quapaw Indian tribe to cancel the leases of their lead-bearing lands in Ottawa County, on which yearly lease payments ran to about \$2,000,000. It was asserted that these leases had been improperly made when Albert B. Fall was Secretary of the Interior, in 1923. The conflict of legislature and governor in 1927 was reflected by the circulation of a petition early in 1928 to submit to a referendum vote at the November election a proposal to authorize the legislature to convene of its own motion, without need of the governor's summons, when it might see fit. The validity of part of the signatures, numbering in all about 80,000, was challenged by opponents of the proposal. In August a governor's mansion at Oklahoma City was completed.

The intention of the U. S. Army authorities to remove the School of Fire from Fort Sill was opposed by the State delegation at Washington. A group of financial backers was formed in July to build a \$3,000,000 hotel of 25 stories in Okla-

home City. Plans for a \$5,000,000 union passenger station in Oklahoma City, to be built on land furnished by the city at its own cost of about \$4,000,000, were approved by the Interstate Commerce Commission in May.

ELECTION. Solid political and press support in the State was lacking to the Democratic presidential candidate, Alfred E. Smith. Ex-Senator Owen, one of the leading political figures in the State, bolted the Democratic National ticket early in the campaign. In the election of November 6, the voters gave Hoover and Curtis, the Republican National candidates, 394,052 votes; to Smith and Robinson, Democratic, 219,206. In the election of United States Representatives, the Democrats lost several seats but retained a majority of the delegation. The Indian inhabitants of the State voted in large numbers and were generally in favor of the Republican ticket for the reported reason that Senator Curtis had Indian blood.

OFFICERS. Governor, Henry S. Johnston; Lieutenant-Governor, W. J. Holloway; Secretary of State, Graves Leeper; State Auditor, A. S. J. Shaw; Attorney-General, Ed Dabney; State Treasurer, R. A. Sneed; Superintendent of Public Instruction, John S. Vaughan; State Examiner and Inspector, John Rogers.

JUDICIARY. Supreme Court Justices: Charles W. Mason, E. F. Lester, James I. Phelps, John B. Harrison, Robert A. Hefner, Albert C. Hunt, Fred P. Branson, J. W. Clark, Fletcher Riley.

OKLAHOMA, UNIVERSITY OF. A State institution for the higher education of men and women, at Norman, Okla., founded in 1892. The enrollment for the autumn of 1928 totaled 4915, of whom 3237 were men and 1678 were women. These were distributed as follows: Graduate school, 226; arts and sciences, 2530; business, 239; education, 82; engineering, 780; fine arts, 347; law, 281; medicine, 197; nursing, 100; and pharmacy, 133. For the summer session, 2373 students were registered, including 855 men and 1518 women. The faculty had 333 members. The productive funds of the University amounted to \$3,200,000, and the income for 1927-28 to \$2,328,525, from the following sources: State appropriations, for maintenance, \$1,237,500; and library, \$250,000; and from student fees, \$191,014. The library contained 100,000 volumes. President, William Bennett Bizzell, Ph.D., LL.D.

OLD-AGE PENSIONS. There can be no doubt that this social insurance project is rapidly becoming a public question in the United States today, largely as a result of the programme of education being carried on by the American Association for Old-Age Security. This organization was instrumental in the drafting of a model old-age pension bill that was presented before the New York Legislature in the spring; it helped bring about the organization of State committees on old-age security in Massachusetts and Maryland; it fathered the first national conference to discuss the problems of old age which was held in New York on April 10. At this meeting papers were read, and discussions participated in, by the following: Prof. J. P. Chamberlain of Columbia University, J. L. Cohen of the Canadian Labor Research Bureau, Leifur Magnusson of the Washington International Labor Office, James H. Maurer of the Pennsylvania Federation of Labor, I. M. Rubinow of the Philadelphia Jewish Welfare Society, Bishop J. H. Darling-ton of Pennsylvania, Thomas Kennedy of the

United Mine Workers of America, J. G. Higgins of the United Association of Journeymen Plumb-ers, Dr. J. H. Holmes of the New York Commu-nity Church, State's Attorney B. S. Bell of Rock Island, Ill., and Senator George Nordin of St. Paul, Minn. At this conference the director of the New York Home for Aged Couples pointed out how old-age insecurity was reaching all classes in society by listing the following professions among the inmates of his home: an artist, a musician, a broker, an engineer, an organist, a teacher, a clergyman, and a lawyer.

The following are among the outstanding events of the year in the field of old-age pen-sions: the passage of a complete social insurance code, including provision for old age and invalid-ity, in *France*; the passage of a noncontributory old-age pension law by the Government of the *Union of South Africa* (see below); the passage of similar laws by the governments of *Greenland* and *Hungary*; the acceptance by the provinces of *British Columbia*, *Saskatchewan*, *Manitoba*, and the Territory of *Yukon* (see below) of Federal as-sistance in the creation of old-age pension funds. In the United States, a bill for a straight pen-sion scheme was introduced before the *New York* Legislature, while an appropriation of \$10,000 was voted for the continued study of old age by a legislative committee; a public hearing on old-age pension legislation was held by the *Minne-sota* senate-interim committee; in *Maine* a study of old-age pensions was begun by the secretary of the State board of charities and the commis-sioner of labor; in *Rhode Island* the State com-missioner of finance was authorized by the 1928 legislature to study pension systems; the *Califor-nia* State department of social welfare was making an extensive survey of the needs of the dependent aged in that State. The question entered politics with the inclusion of a promise to consider old-age pensions in the platform of the *New York* State Democratic party; similarly, the Democratic candidate for governor in *Massachu-setts* announced himself as favoring an effective old-age pension law.

NATIONAL CIVIC FEDERATION STUDY. Early in the year the National Civic Federation made pub-lic the results of a survey it had completed into the existence of old-age dependency. On the basis of the data obtained, the National Civic Federa-tion concluded that the problem was highly over-rated and that the need for old-age pensions was slight. The survey was based on interviews had with a group of 13,785 persons of over 65 years liv-ing in 11 cities and two country towns in the States of New York, New Jersey, Pennsylvania, and Connecticut. None of the persons was insti-tutionalized. The survey found that the following was the distribution of ownership of property:

Property owned:	Number of persons ^a	Percentage distribution
\$10,000 or over	3,546	25.8
\$7,500 to \$9,999	844	6.1
\$5,000 to \$7,499	1,475	10.7
\$4,000 to \$4,999	617	4.5
\$3,000 to \$3,999	648	4.7
\$2,000 to \$2,999	708	5.2
\$1,000 to \$1,999	701	5.1
\$100 to \$999	1,024	7.4
Under \$100	129	.9
None	4,068	29.5
Not stated	25	...
Total	13,785	100.0

It will be observed that 42 per cent had prop-erty in the value of \$5000 or over, while 29.6 per

cent had no property. The examination of in-comes showed that but 19.1 per cent of the group had no incomes, while one-fourth earned \$1500 or more annually. The critics of the report, and they were many, pointed out that these data did not warrant the conclusions drawn. In the first place, the dependent aged were not included in the inquiry, in the second place the investigation had limited itself to urban communities and evidently to a selected group as well, while, also, the conclusions differed considerably from the findings of the Massachusetts study made in 1926, which examined the economic status of 18,000 aged persons. Here it was found that one-third of the group had incomes of less than \$300 an-nually and that 39.4 per cent owned property valued at less than \$1000, while 30.8 per cent had no property whatever. The implication was that the Massachusetts study was conducted under impartial auspices and presented a better view of the situation. Nevertheless, these facts were pointed out in the National Civic Federa-tion's study: more than one-fourth of the aged persons had no property and 16.8 per cent had neither property nor income, that is to say, one person out of every six had no visible means of support; two-fifths of the group were dependent upon aid from friends or relatives, while the number who were entirely dependent upon out-side aid was between 20 and 25 per cent.

Dr. I. M. Rubinow, perhaps the outstanding au-thority in the United States on social insurance, in an article in the *New Republic* for Apr. 5, 1928, in pointing out these and other criticisms of the report, said:

Whether a straight pension of a system of social in-surance or a combination of both will prove to be the best method [of caring for the dependent aged] is a subject for expert study and investigation. But the whole subject cannot much longer be neglected by American legislatures. One may reasonably hope that the social conscience of the American people will not disregard much longer the problem of proper provision for the aged, only because some 30 or 40 per cent and not 85 or 100 per cent require it.

Further light on one of the lacunæ of the Civic Federation report was shed by a study of the dependent aged of San Francisco. Here it was found that there were in that city in 1925, 2156 dependent aged persons who made up 6 per cent of the population who were of over 60 years. Of these, 1800 were receiving institutional care and the remainder were the recipients of outdoor re-lief. The report points out that the unmarried and childless predominate among the dependent aged, and that there is no correlation between old-age dependency and immigration, and that the foreign born do not have a disproportionate share of the aged dependents.

TRADE-UNION ACTION. In discussing pro-grammes of social insurance, one must not lose sight of the important efforts being made by trade-unions in the handling of old age and in-validity. The fact is, as the *Monthly Labor Re-view* indicated in a series of significant articles in its January and February issues, a large group of trade unions had already applied themselves with varying success to the solution of these problems. The following national and interna-tional unions had evolved programmes: bridge and structural iron workers, bricklayers, electri-cal workers, granite cutters, printing pressmen and assistants, street railway employees, print-ers, locomotive firemen and enginemen, locomo-tive engineers, and railway trainmen, all of which

have some plan of old-age pensions. In addition, the following operate their own homes for the aged: carpenters, printing pressmen, railroad employees, railway conductors, printers.

MASSACHUSETTS. In 1923 a commission in this State was appointed to inquire into the feasibility of setting up a State programme for the care of the aged. After extended hearings, the committee brought in two reports—the majority report, favoring a State pension scheme for the care of the aged; and the minority report, recommending the improvement of the indoor-relief system. One section of the minority report suggested that the State be permitted to receive bequests toward a fund for the assistance of aged persons. In its 1928 session, the Legislature of Massachusetts passed a measure embodying the above recommendation as its solution of the problem of the dependent aged. The treasurer of the State, after such a fund, to which the State does not contribute, has reached the half-million mark may give out doles to aged persons whom he deems worthy. The minimum age for males is 65; for females, 60 years. Social workers in Massachusetts, in pointing out the futility of the measure, called attention to the fact that there were in the State between 70,000 and 80,000 persons who could claim doles under the law and that out of the income of the bequest fund at least one in every thousand would receive relief.

MONTANA. How successfully old-age pensions work out was demonstrated by Silver Bow County, Montana, which in August paid old-age pensions to 102 persons. Eight persons received the maximum, \$25 for the month; two received \$20, and 92 received \$15. By contrast it should be noted that formerly it had cost the counties of the State to maintain an inmate in a poor farm an average of \$518.91 yearly or \$43.18 per month.

CANADA. Mention was made in the 1927 YEAR BOOK of the passage by the Canadian Parliament of an old-age pension law, funds of which were to be built up by equal contributions from the provinces and the Dominion. British Columbia was the first province to sign the pension agreement with the Dominion. Saskatchewan, Manitoba, and the Territory of Yukon signed agreements in 1928. The British Columbia scheme went into effect in September, 1927. From that month until Mar. 31, 1928 (six months), the province undertook the care of 2712 aged persons who represented 22.6 per cent of the population 70 years of age and over. The average monthly pension was \$17.43 and the total amount paid in pensions was \$262,904, of which the Federal Government contributed one-half. Of the pensioners, 1579 were men and 1133 women. Nineteenths of these aged persons were born in either Canada or Great Britain. Among the recipients of the pensions was to be found property valued at \$1,268,938 or an average of \$468 per person.

SOUTH AFRICA. In June the Government of South Africa announced the passage of an act for the purpose of granting noncontributory pensions to aged persons. The following will be entitled to pensions: All white and all colored persons aged 65 and over living in the Union of South Africa who are British subjects and resident in the Union for 15 out of the 20 years preceding the date of application for a pension. Marriage with an alien does not disqualify a woman otherwise eligible. Pensions are to go to

those white persons whose annual income does not exceed £51 and to colored persons with annual incomes less than £33. The pensions for white persons range from £3 to £30 for those having less than £24 yearly. In the cases of married persons, the income of the husband is to be considered as one-half of the total means of both.

DENMARK. In 1927 Denmark reorganized its invalidity insurance code, the following being its chief provisions: All persons who are members of sickness insurance funds are insured under the new system until their sixty-second year. The law, which is voluntary, applies to working people whose maximum incomes range between 2200 and 3500 crowns, and these become recipients of insurance benefits when their incomes are reduced to one-third of their customary earning power. The maximum benefit is 800 crowns annually. The fund is maintained by contributions from the worker, the employer, and the State. Provisions also are made for treatment and include hospitalization, artificial limbs, reeducation, etc. With the reaching of the pensioner's sixty-second year, his contributions cease, as do those of the employer; but the benefits continue, one-half being paid by the State and the other by the commune in which he resides.

OTHER COUNTRIES. In *England* the pensionable age was reduced from 70 to 65. Under the Contributory Pensions Act of 1925, some 16,300,000 persons were insured, while at the end of 1927, 336,163 men and 674,254 women were receiving pensions. In *New Zealand*, on Mar. 31, 24,875 persons were receiving old-age pensions. The average annual pension amounted to £41 15s. In *Russia*, the Council of People's Commissars recommended a decree which provides for the pensioning of peasants of 65 years and over who are unable to support themselves.

OLDFIELD, WILLIAM ALLAN. American congressman, died at Washington, D. C., November 19. He was born at Franklin, Ark., Feb. 4, 1874, and was graduated from Arkansas College in 1896. At the outbreak of the Spanish-American War, he enlisted with the Second Arkansas Volunteers, serving as sergeant and later as first lieutenant in Company M. After being mustered out of the Army at the end of the war, he was admitted to the Arkansas bar in 1899. Oldfield's political career started with his appointment as prosecuting attorney for the third judicial circuit of Arkansas in 1902, a position which he held until 1906. A party-loyal Democrat, he was seated in the Sixty-first Congress, as a representative from the second Arkansas district, in 1909. He was successively reelected through the Seventieth Congress, serving his ninth year as Democratic whip of the House at the time of his death. Being made a member of the Ways and Means Committee in 1915, he proved an influential speaker on financial matters, advocating extensive tax reductions. He was acting chairman of his party's congressional campaign committee in 1924, and chairman in 1926, and in 1928 held a similar office on the Democratic congressional committee in the latter year. He aided in the foundation of the unsuccessful *National Democrat* in 1925, a magazine which was to have furnished publicity for the Democratic party. Mr. Oldfield spoke frequently in favor of Gov. Alfred E. Smith during the presidential campaign of 1928.

OLYMPIC GAMES. The ninth Olympic Games were held at Amsterdam, Holland, the

various events stretching over a period of several weeks and ending officially on Aug. 12, 1928. Germany made a remarkable showing and when team accomplishments were finally registered, it was found that this nation had carried off first honors, with the United States ranking second. The events included in this rating were track and field athletics, rowing, swimming, boxing, catch-as-catch-can wrestling, Greco-Roman wrestling, fencing, gymnastics, yachting, cycling, modern pentathlon, equestrian sports, weight lifting, football, and hockey.

Allowing ten points for first place, five points for second, four points for third, three points for fourth, two points for fifth, and one point for sixth, the Germans amassed a total of 45½ points. The other nations scored as follows: United States, 39; Holland, 34½; Italy, 33½; Sweden, 32½; Finland, 25; Great Britain, 18; France, 16; Argentina, 12½.

In the women's track and field contests, Canada was victorious, with the United States second and Germany third; the winter sports were won by Norway, with the United States second and Sweden third. The lacrosse competitions, where a triple tie existed among the United States, Canada, and Great Britain, were not included in the above scoring totals.

The team records in the several events were:

Track and field—United States, first; Finland, second; Great Britain, third; Germany, fourth; Sweden, fifth; Canada, sixth.

Rowing—United States, first; Great Britain, second; Switzerland, third; Italy, fourth; Germany, fifth; Australia, sixth.

Swimming—United States, first; Germany, second; Great Britain, third; Sweden and Holland, tied for fourth; Japan, sixth.

Boxing—Argentina and Italy, tied for first; United States, third; Holland, fourth; Sweden, fifth; New Zealand and Hungary, tied for sixth.

Catch-as-catch-can wrestling—Finland, first; Sweden, second; Switzerland, third; United States, fourth; Canada, fifth.

Greco-Roman wrestling—Germany, first; Finland, second; Switzerland, third; Hungary, fourth; Estonia, fifth; Egypt, sixth.

Fencing—Italy, first; France, second; Hungary, third; Germany, fourth; United States, fifth; Argentina, sixth.

Gymnastics—Switzerland, first; Czechoslovakia, second; Jugoslavia, third; France, fourth; Finland, fifth; Italy, sixth.

Yachting—Norway first; Sweden, second; Denmark, third; Holland, fourth; Estonia, fifth; Finland, sixth.

Cycling—Holland, first; Denmark, second; Great Britain, third; France, fourth; Italy, fifth.

Modern pentathlon—Sweden, first; Germany, second; Holland, third; Italy, fourth; Finland, fifth; Great Britain, sixth.

Equestrian sports—Holland and Poland, tied for first; Germany and Spain, tied for third; Sweden, fifth; Norway, sixth.

Soccer—Uruguay, first; Argentina, second; Italy, third; Spain, fourth.

Field hockey—British India, first; Holland, second; Germany, third; Belgium, fourth.

Weight lifting—Germany, first; France, second; Austria, third; Italy, fourth; Egypt, fifth; Estonia, sixth.

The track and field events probably attracted more general interest than any other feature, the United States leading the way in point scoring with a total of 173. The triumph of the United States was due to the strong showing the athletes of that country made in the field events. Finland captured second honors with 102 points, chiefly the result of pronounced strength in the distance runs. The other nations to score points were: Great Britain, 46; Sweden, 44; Germany, 44; Canada, 38; France, 27; Japan, 19; South Africa, 14; Ireland, 10; Norway, 7; Hungary, 5; Haiti, 5; Chile, 5; Italy, 4; Philippines, 3; Switzerland, 3; Holland, 1.

A list of the track and field champions crowned at the ninth Olympic Games at Amsterdam follows:

16-pound shot, Kuck, United States; running high jump, King, United States; 10,000-meter run, Nurmi, Finland; 100-yard dash, Williams, Canada; 400-meter hurdles, Lord Burghley, Great Britain; 16-pound hammer throw, O'Callaghan, Ireland; 100-meter dash (women), Miss Robinson, United States; 800-meter run, Lowe, Great Britain; running broad jump, Hamm, United States; discus throw (women), Miss Kono-packa, Poland; 110-meter-high hurdles, Atkinson, South Africa; 200-meter dash, Williams, Canada; pole vault, Carr, United States; discus throw, Houser, United States; 1500-meter run, Larva, Finland; running hop, skip, and jump, Oda, Japan; javelin throw, Lundquist, Sweden; 800-meter run (women), Frau Radke, Germany; 400-meter run, Barbuti, United States; 5,000-meter run, Ritola, Finland; 8000-meter steeplechase, Lonkola, Finland; Marathon, El Ouafi, France; running high jump (women), Miss Catherwood, Canada; 400-meter relay, United States; 1600-meter relay, United States; 400-meter relay (women), Canada.

The United States swimmers triumphed most impressively, capturing 10 out of a possible 16 first places. The champions were:

100-meter free style, Weissmuller, United States; high dive, Desjardines, United States; low dive, Desjardines, United States; 100-meter back stroke, Kojac, United States; 800-meter relay, United States (Clapp, Laufer, Kojac, Weissmuller); 200-meter breast stroke, Japan; 1500-meter free style, Sweden; 400-meter free style, Argentina; water polo, Germany.

The women's swimming champions were: high dive, Miss Pinkston, United States; 100-meter free style, Miss Osipowich, United States; 400-meter free style, Miss Norelius, United States; 400-meter relay, United States (Lambert, Osipowich, Garratti, Norelius); low dive, Miss Meany, United States; 200-meter breast stroke, Germany; 100-meter back stroke, Holland.

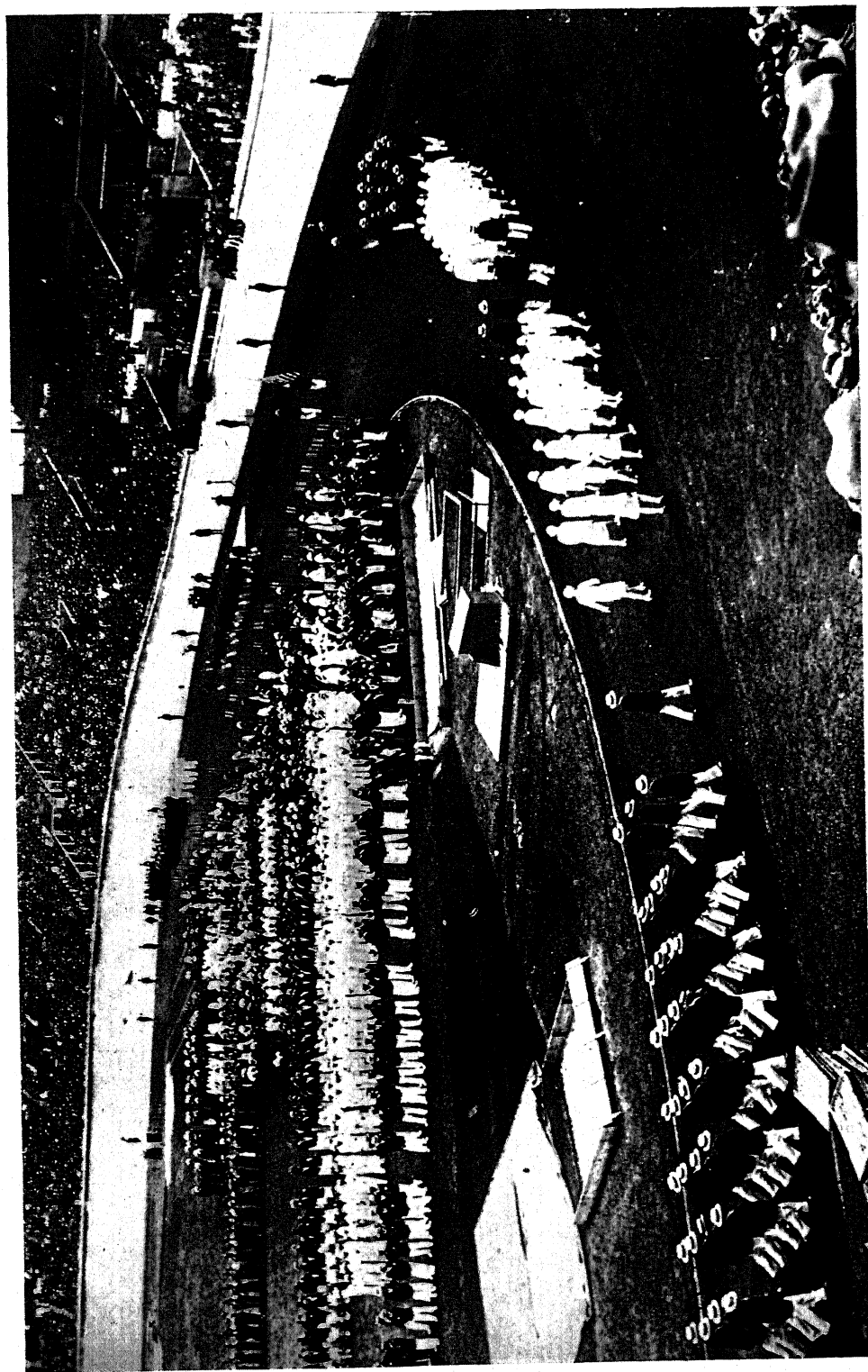
The biggest surprise of the Olympics, perhaps, came in the boxing competitions, through the failure of the United States to win a single final. The champions were:

Flyweight, Kocsis, Hungary; bantamweight, Tamagnini, Italy; featherweight, Vanklaeveren, Holland; lightweight, Orlando, Italy; middleweight, Toscani, Italy; light heavyweight, Avendano, Argentina; heavyweight, Rodriguez, Argentina.

Next to track and field contests, the various rowing events doubtless created the greatest enthusiasm, the climax coming in the eight-oared struggle between the University of California crew, from the United States, and the Thames Rowing Club of Great Britain. The Californians won by a margin of three-quarters of a length. The British led for the first 150 meters, but at that point the collegians hit up their stroke to assume a supremacy which they never relinquished to the end.

Another colorful feature was the Marathon which was won by El Ouafi, an Algerian running in the colors of France. In the Paris Olympics of 1924, El Ouafi finished eighteenth and was not considered at all likely to capture the Amsterdam competition. The Algerian, however, displayed amazing stamina and covered the 26 miles of the course in 2 hours, 32 minutes, 57 seconds, or less than 22 seconds behind the Olympic record set in 1920 at Antwerp by Hannes Kolehmainen of Finland. It was estimated that half the population of Holland witnessed this thrilling race and 40,000 were gathered in the Amsterdam Stadium at the finish. Miguel Plaza, a Chilean news vendor, took second place, while Joie Ray, the United States favorite, finished fifth.

OMAN. An independent Moslem state in southeastern Arabia, extending for about 1000 miles along the southern coast of the Gulf of Oman; guaranteed in its integrity by Great Britain and France. Area, about 82,000 square miles;



Keystone View Co.

OLYMPIC GAMES AT AMSTERDAM, 1928
THE AMERICAN TEAM MARCHING AROUND THE STADIUM AT AMSTERDAM, HOLLAND

population estimated at 500,000; chiefly Arabs, but with a considerable Negro element along the coast. The capital, Muscat, and the neighboring town of Matrah, have a combined population of about 20,000 made up almost entirely of Negroes and Baluchis. Imports, which consist chiefly of rice, coffee, and cotton piece goods, and exports, which comprise dates, dried limes, pomegranates, and dried fish, are from and to India for the most part. The reigning Sultan in 1928 was Seyyid Taimur bin Faisal bin Turki, who succeeded his father Oct. 5, 1913.

ONTARIO. The second largest province of the Dominion of Canada (after Quebec), situated between Quebec on the east and Manitoba on the west. Area, 407,262 square miles; population according to the census of 1921, 2,933,662. The estimated population in 1927 was 3,187,000. The capital is Toronto, with a population in 1921 of 521,893; estimated in 1926, 670,945. Other large cities: Ottawa (capital of the Dominion), 107,843; Hamilton, 114,151; London, 60,950. In 1926 there were 7105 elementary schools and 422 secondary schools, with an attendance of 739,674 pupils, and instructed by 18,410 certified teachers.

Agriculture is the chief occupation of the province. The land under cultivation was estimated at 14,000,000 acres. The acreage and yield of the more important crops in 1927 were: Wheat, 870,957 acres, 21,963,000 bushels; Oats, 2,689,295 acres, 96,815,000 bushels; barley, 514,802 acres, 16,010,000 bushels; rye, 72,323 acres, 1,367,000 bushels; flax, 7080 acres, 67,000 bushels; mixed grain, 799,333 acres, 28,456,000 bushels; other grains, 384,454 acres, 7,674,000 bushels; potatoes, 153,468 acres, 9,898,000 cwts.; roots, 107,181 acres, 18,503,000 cwts.; hay and clover, 3,383,722 acres, 5,239,000 tons; fodder corn, 367,772 acres, 3,497,000 tons. The farm values for 1925 were: land, \$879,212,000; buildings, \$480,027,000; improvements, \$164,188,000; livestock, \$233,160,000. The total value of mineral products in 1928 amounted to \$100,238,933, according to preliminary official estimates, a record for all time. This production included metallic minerals, \$71,199,917, an increase over the previous year of 13.7 per cent; nonmetallic minerals, \$7,679,133; structural materials, \$14,688,310; and clay products, \$6,671,573, an increase of 14 per cent. The metallic minerals accounted for 71 per cent of the total production and the 1928 output could be compared with \$62,631,255 in 1927 and \$59,166,249 in 1926. In 1928, gold, which included some silver, accounted for \$32,688,817. The revenue of the province for 1927-28 was \$55,790,000, and the expenditure, \$55,613,000. There are about 11,000 miles of railway.

The executive power is vested in a lieutenant-governor, appointed for five years by the governor-general of Canada, and a responsible ministry; legislative power is in a single chamber of 112 members, elected for four years. Women have the franchise and the right to election to the chamber. Ontario is represented in the Dominion Senate by 24 members and in the House of Commons by 82, Lieutenant-Governor in 1928, W. D. Ross; Prime Minister and President of the Council, G. Howard Ferguson; Attorney-General, W. H. Price; Treasurer, J. D. Monteith; Secretary and Registrar, L. Goldie; Education, G. Howard Ferguson; Agriculture, J. S. Martin; Public Works and Highways, G. S. Henry; Lands and Forests, W. Finlayson; Mines, Charles Mc-

Crea; Labor and Health, Dr. Formes Godfrey; Ministers without Portfolio, R. J. Cooke and Leeming Carr. See CANADA.

OPERA. See MUSIC.

OPIUM TRAFFIC. See LEAGUE OF NATIONS.

OPTICAL SOCIETY OF AMERICA. See PHYSICS.

ORANGE FREE STATE. A province of the Union of South Africa. Capital, Bloemfontein. See SOUTH AFRICA, UNION OF.

ORANGES. See HORTICULTURE.

ORCHESTRAS. See MUSIC.

ORDNANCE. See MILITARY PROGRESS.

ORE DEPOSITS. See GEOLOGY.

ORE DRESSING. See METALLURGY.

OREGON. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 783,389. The estimated population on July 1, 1928, was 902,000. The capital is Salem.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Wheat	1928	1,027,000	23,318,000	\$24,083,000
	1927	1,065,000	26,782,000	29,996,000
Hay	1928	1,140,000	2,323,000 "	26,446,000
	1927	1,133,000	2,342,000 "	25,143,000
Oats	1928	304,000	10,944,000	5,581,000
	1927	310,000	10,540,000	5,586,000
Potatoes	1928	52,000	6,240,000	4,368,000
	1927	52,000	6,240,000	4,680,000
Hops	1928	17,000	17,000,000 "	3,400,000
	1927	16,000	15,904,000 "	3,976,000
Corn	1928	82,000	2,952,000	2,952,000
	1927	81,000	2,916,000	2,770,000
Barley	1928	105,000	3,675,000	2,646,000
	1927	91,000	3,185,000	2,452,000
Apples	1928	.....	6,950,000	6,255,000
	1927	.....	4,320,000	4,752,000

" tons, " pounds.

MINERAL PRODUCTION. Stone, sand, and gravel contributed about one-half of the total value of the mineral production of the State for 1926. The metal production, though secondary in point of value, rose in 1927. Gold was mined to the extent of 14,676 fine ounces in 1927, as compared with 13,243 in 1926; in 1927 it was valued at \$303,383; in 1926, at \$273,759. The silver produced rose to 45,830 fine ounces for 1927, from 28,733 for 1926; in value it was \$25,986 for 1927, and \$18,553 for 1926. Some copper and some lead also were mined. The value of stone quarried in 1926 was \$2,152,512. The total value of the State's mineral products was \$6,941,355 for 1926; \$7,826,711 for 1925.

FINANCE. State expenditures for the year ended Sept. 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$11,976,691 (of which \$442,844 was aid to local education); for conducting public service enterprises, \$3769; for interest on debt, \$2,906,486; for permanent improvement, \$7,182,648; total, \$22,069,594 (for which \$9,822,556 was for highways; \$3,137,610 being for maintenance and \$6,684,946 for construction). Revenues were \$22,954,710. Of this, property and special taxes formed 26.4 per cent; departmental earnings and charges for officers' services, 5.8 per cent; sales of licenses and taxation of gasoline, 50.7 per cent. Property valuation was \$1,110,677,349; State taxation thereon, \$5,286,824. Net State funded debt on Sept. 30, 1927, was \$36,155,029. Highway bonds outstanding were \$34,466,750.

There occurred in eastern Oregon in 1923 much refinancing and exploratory activity with a bearing on possible future production. The estimated 1928 production of gold was \$209,000; the total production of the metals, gold, silver, copper, and lead, in 1928 was valued at \$261,000.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 3361.74. There were built in 1928, 26 miles of additional first track.

EDUCATION. Normal-school facilities for a previously unserved portion of the State were provided by the building in 1928 of the Eastern Oregon Normal School at La Grande. A survey was made in Portland of the causes for which pupils had been dropped from elementary or from high schools. The school-age population of the State in 1927 was 256,885. There were enrolled in the public schools 185,959 pupils, of whom 144,701 were in elementary schools and 41,258 in high schools. Expenditure for public-school education totaled, for the year, \$23,783,853. Salaries of teachers averaged, for men, \$167.60 a month; for women, \$119.08 a month.

CHARITIES AND CORRECTIONS. The State board of control, as functioning in 1928, exercised the central authority over a system of State institutions for the care of certain of the sick and of delinquents, the blind, the deaf, the feeble-minded, and the veteran soldiers. The board was created by statute of 1913, and consists of the governor, secretary of state, and state treasurer. It appoints the executive heads of the charitable and correctional institutions and makes purchases for these institutions. Under a law of 1917, the direction of the State Penitentiary was put in the sole hands of the governor, but the board has continued to contract for penitentiary supplies and improvements. The board exercised in 1928 a visitorial power over 11 State-aided homes, nurseries, and aid societies. The State institutions wholly under its direction were: Oregon State Hospital (mental), Salem; Eastern Oregon State Hospital (mental), Pendleton; State Institution for Feeble-minded, Salem; Oregon State Training School (delinquent boys), Salem and Woodburn; State Tuberculosis Hospital, Salem; State School for the Blind, and State School for the Deaf, Salem; State Industrial School for Girls, Salem; State Soldiers' Home, Roseburg; Oregon Employment Institution for the Blind, Portland.

POLITICAL AND OTHER EVENTS. The State Public Service Commission sought to enforce a ruling that required railroads to grant a through single rate on shipments from the producing region to the milling or processing point and thence later to the destination of the finished product. Suit against the ruling was brought in the Federal District Court at Portland by a number of the railroads, on the ground that it would involve them in serious loss of revenue. The branch line of the Great Northern Railway system to Klamath Falls was completed and was opened for traffic May 11. An initiative petition was presented to bring before the voters of the State at the November election a proposal to prohibit the declaration of an emergency on the part of the State legislature as an occasion for the passage of any bill to repeal or amend a law having the approval of the people. A special election was held in Portland in April on the question whether to ratify a proposed merger of the two leading power companies of the city—the Port-

land Electric Company and the Northwestern Electric Company; the voters rejected the proposal by a heavy vote of about two to one. The automobile license law of the State, apportioning the cost of licenses on the basis of weight instead of value, was widely discussed.

ELECTION. In the election of November 6, the State gave a popular vote of 205,341 for the Republican presidential and vice presidential candidates, Hoover and Curtis; for Smith and Robinson, Democratic candidates, 109,223. A delegation of three Republican members was elected to the United States House of Representatives. Hal E. Hoss, Republican, was elected secretary of state; Thomas B. Kay was reelected state treasurer; I. H. Van Winkle, Republican, was reelected attorney-general.

OFFICERS. Governor, I. L. Patterson; Secretary of State and State Auditor, Hal E. Hoss; Treasurer, Thomas B. Kay; Attorney-General, I. H. Van Winkle; Superintendent of Public Instruction, Charles A. Howard.

JUDICIARY. Supreme Court: Chief Justice, John L. Rand; Associate Justices: Thomas A. McBride, Henry J. Bean, George M. Brown, George Rossman, Harry H. Belt, and O. P. Coshov.

OREGON, UNIVERSITY OF. A State institution of higher education at Eugene, Oregon, founded in 1872. The enrollment for the autumn term of 1928 was 3237, divided as follows: Undergraduates, 2796; graduates, 129; law school, 83; medical school, 229. Of the total, 1884 were men and 1353 women. In the summer session of 1928, the registration totaled 1295, of whom 369 were men and 926 women; of these, 1064 were undergraduate and 231 graduate students. The faculty in the autumn term of 1928 numbered 211. The total income for the year 1928 was \$1,687,862. The main library contained 195,491 and the medical school library, 9734 volumes. Among the gifts received by the University during the year were the following: From the General Education Board, \$36,000 for the University of Oregon School of Medicine, at Portland; from the late Elizabeth H. Harmon, a bequest of \$28,722 for a fine arts building; from Mrs. Gertrude Bass Warner, valuable additions to the Murray Warner Collection of Oriental Art; and from Frank L. Chambers, land valued at \$15,000. During the summer of 1928, a new dormitory to house 275 men and serve 400 was built at an expenditure of \$338,683, the construction cost being financed by an issue of bonds to be retired from the earnings of the building. President, Arnold Bennett Hall, J.D., LL.D.

OREGON STATE AGRICULTURAL COLLEGE. A Federal and State institution for the higher education of men and women at Corvallis, Oregon, founded in 1868, when the State designated Corvallis College as the recipient of the Federal land-grant funds and began to appropriate State funds; the institution was permanently designed as the State Agricultural College in 1870 and became wholly a State institution in 1885. Degrees are granted in 10 schools: Agriculture, chemical engineering, commerce, engineering and mechanic arts, forestry, home economics, military science, mines, pharmacy, and vocational education. The enrollment for the autumn term of 1928 was 3464, of whom 2357 were men and 1107 women. The summer session registration was 1420. There were 299 members on the teaching faculty in 1927-28. The income for the same period from the original land-grant fund and

other Federal funds from the State of Oregon (millage tax), student fees, etc., as well as from certain appropriations from Oregon counties for extension work, totaled \$2,116,226, as follows: for resident instruction, \$1,280,165; agricultural experiment station, \$273,173; extension service, \$279,364; miscellaneous, \$283,524. There were 85,000 catalogued volumes in the library. A new physics building, costing \$148,014; a men's dormitory, \$438,810, comprising five halls of residence for men, with a capacity of 340 students; and the Memorial Union Building, \$544,778, were completed and occupied during 1928. President, William Jasper Kerr, D.Sc., LL.D.

ORGANIC CHEMISTRY. See CHEMISTRY.

ORGANISTS. See MUSIC.

ORIENTAL FRUIT MOTH. See ENTOMOLOGY, ECONOMIC.

ORIENTAL RESEARCH. See ARCHÆOLOGY.

OUTCAULT, ɔt'kault, RICHARD FELTON. American newspaper artist and humorist, originator of colored comic sheets, died at Flushing, L. I., September 25. He was born at Lancaster, Ohio, Jan. 14, 1863, and was graduated from McMicken University, Cincinnati. While drawing comic illustrations for the *New York World* in 1895, he adopted the suggestion that vivid color would make his pictures more popular, and thenceforth the hero of "Hogan's Alley," a figure he had created, appeared in a bright yellow dress, becoming widely known as the "Yellow Kid," and giving rise to the current phrase, "yellow journalism." Mr. Outcault transferred this one-toothed creation to the *New York Journal* in 1896, going in the following year from that paper to the *New York Herald*, where he started a series called "Pore li'l Mose" in 1901, and the long-lived "Buster Brown" in 1902. He founded and became president of the Outcault Advertising Company, of Chicago, and he published several of his comic figures in book form, including: *Buster, Mary Jane, and Tige* (1908); *Buster Brown, the Busy Body* (1909); *Real Buster and the only Mary Jane* (1909); *Buster Brown in Foreign Lands* (1912); *Buster Brown—the Fun Maker* (1912); and *Buster Brown and His Pets* (1913).

OUTBOARD RACING. See YACHTING.

OWYHEE DAM. See DAMS.

PACIFIST MOVEMENTS. See PEACE AND PEACE MOVEMENTS.

PACKARD, JAMES WARD. American inventor and automobile manufacturer, died at Cleveland, Ohio, March 20. He was born at Warren, Ohio, Nov. 5, 1863. He was graduated from Lehigh University in 1884 with the degree of M.E., and entered the employ of the Sawyer-Man Electric Company, of New York, in the same year. In 1890 he returned to Warren and organized the Packard Electric Company, manufacturing electric lamps; he was one of the pioneers in the industry and invented many processes and devices used in electric lighting. He became interested in the automobile in its early days, and in 1893 had the plans drawn for the first Packard machine. The financial depression of the time halted his work, but by 1897 he had organized the Packard Motor Car Company, which was known at first as the Ohio Automobile Company. He was president of the company until 1903, then chairman of the board of directors, and was a member of the board until he retired from active business in 1915. Mr. Packard gave away large sums of money in philanthropy; his largest gift was one

of \$1,000,000 to Lehigh University for an electrical and mechanical engineering laboratory.

PACKING INDUSTRY. See LIVESTOCK.

PACT OF PARIS. See KELLOGG TREATIES.

PAHANG, pā-häng'. See FEDERATED MALAY STATES.

PAIN, BARRY (ERIC ODELL). English author, died at Watford, England, May 5, at the age of sixty-two. He was educated at Corpus Christi College, Cambridge, where he was a classical scholar. For a time he was a private tutor, but as early as 1889 he had met with literary success, his "Hundred Gates" appearing in the *Cornhill* that year. Some of his parodies and sketches had been published in *Granta*, the Cambridge University magazine, and when he took up writing as a profession he contributed to *Punch* and the *Speaker*. He was a member of the staff of the *Daily Chronicle* and of *Black and White*, and for a time edited the weekly *To-day*, in succession to the late Jerome K. Jerome. His work (which was mainly humorous, although he wrote also detective tales and others dealing with the occult), was little known in America until 1914-15, when he visited the United States. He wrote, among other books: *In a Canadian Canoe* (1891); *Playthings and Parodies* (1892); *Eliza* (1900); *Another Englishwoman's Love Letters* (1901); (with Blyth), *The Shadow of the Unseen* (1907); *Proofs Before Pulping* (1909); *Stories in Grey* (1912); *Stories without Tears* (1912); *The New Gulliver* (1913); *Mrs. Murphy* (1913); *One Kind and Another* (1914); *The Short Story* (1915) *Marge Askinforit* (1921); *This Charming Green Hat Fair* (1925); and *Essays of To-day and Yesterday* (1926).

PAINTING. The general trend of painting both in Europe and America showed a return to the academic school. This may not at first be apparent when so many of the academies were just beginning to accept the modernists and even to honor them with prizes. The Carnegie Institute in Pittsburgh for two years had given its highest prize to works of the modern French school. Yet, if one considers that the *Still Life*, by Derain, which won the prize in the 1928 exhibition is an example of Derain's more academic work, the statement still holds true. It was the artists themselves who were becoming a little more conservative. It was noticeable in such exhibitions as that of the Whitney Studio Club that the younger artists were showing more drawings and were concentrating their efforts on studies. This perhaps foretold a weeding out of fashion from the definite advances of the modern schools.

Events in the world of painting included a number of discoveries. A panel of St. Francis of the school of Perugino was identified as one of the predella panels belonging to an altarpiece by Raphael formerly in the convent church of St. Antonio in Perugia and now in the Metropolitan Museum. A lost altarpiece by Benozzo Gozzoli was discovered by a parish priest in the parochial church of San Andrea in Italy. Several important frescoes were discovered in Italy, including some in the historic chapel of Santa Barbara in Castelnuovo. Another group was thought to have been done by Massaccio, and still another, in a church at Pistoia, by Pietro Lorenzetti. A series of frescoes of the early sixteenth century were found in the Gothic church of Maria Saal in Vienna. They represent the genealogical table of Christ and were thought to have been done by an artist of Durer's circle. Other discoveries were: the Ma-

donna del Baldaccio found in England, a Tintoretto in an obscure German church, a Rembrandt in Spain, and a large number of Rowlandsons discovered in a garret.

Among the interesting events in New York was the plan of the Museum of the City of New York, which temporarily was occupying the Gracie Mansion, to erect a new building. The sum of \$2,000,000 was needed to build and endow the new museum at Fifth Avenue and 103rd Street. Plans of colonial design by Joseph H. Freedlander had been accepted and work was to start.

BIBLIOGRAPHY. Important publications of the year include: A. Venturi, *Michaelangelo*; T. B. Clark, *Portraits by Early American Artists of the 17th, 18th, and 19th Centuries*, an important work in the history of American painting; Paul de Lapparent, *Toulouse-Lautrec*; Florent Fels, *Vincent Van Gogh*; Charles Diehl, *L'Art Chrétien Primitif et l'Art Byzantin*, a work by the well-known French authority; F. Carco, *La Légende et la Vie d'Utrillo*; Allan Marquand, *The Brothers of Giovanni della Robbia*; P. Soupault, *William Blake*; Puig Y. Cadafalch, *Le Premier Art Roman*; Walter Pach, *Ananias, Or the False Artist*; A. Bredios, *Jan Steen*; Leon Werth, *Claude Monet*; A. Calabi, *Pisanello*; J. B. de la Faille, *L'Oeuvre de Vincent Van Gogh*, a catalogue of Van Gogh's paintings; Pierre Couthon, *La Vie de Delacroix*; A. P. Oppe, *Thomas Rowlandson*.

NECROLOGY. Among the men in the world of art who died in 1928 were: Harry Siddons Mowbray, nationally known painter of murals; Arthur B. Davies, famous American artist; Frederick Arthur Bridgeman, an artist known particularly for his genre and historical paintings; Frederick S. Lamb, New York artist; Warren Davis, American painter and etcher; William Clark Rice, artist and mural decorator; Franz von Stuck, decorator of the Munich school; Samuel L. Scherer, director of the City Art Museum, St. Louis; Walter G. Strickland, director of the National Gallery of Ireland and vice president of the Royal Irish Academy; Sir Frank Dicksee, president of the Royal Academy; Bashford Dean, curator of armor at the Metropolitan Museum; Loys Delteil, learned French authority on prints; Charles A. Loesser, art collector and critic; Herschel V. Jones and Edwin S. Bayer, well-known collectors. For most of these, separate biographies will be found.

See ART EXHIBITIONS; ART MUSEUMS.

PALÆONTOLOGY. See GEOLOGY.

PALESTINE. A territory comprising that part of historic Palestine which lies to the west of the River Jordan; formerly a vilayet of the Turkish province of Syria; since the War a new State organized under British mandate, providing a national home for the Jews.

AREA AND POPULATION. The area of Palestine under British mandate is about 9000 square miles. The population, according to the census of Oct. 23, 1922, was 757,182, of whom 590,890 were Moslems; 83,794 Jews; 73,024 Christians; 7028 Druses; 163 Samaritans; 265 Bahais; and the remainder Sikhs, Hindus, and Metawilehs. Capital, Jerusalem, with a population in 1922 of 62,678. Other large towns with their populations in 1922 are Jaffa, 47,709; Haifa, 24,634; Gaza, 17,480; Hebron, 16,577; Nablus, 15,947. The Jewish settlements are grouped in the four districts of Judea, Samaria, and upper and lower Galilee. The total population of Jews permanently settled

in Palestine has risen since the War from 55,000 to 130,000, or nearly 70 per cent of the entire population. The fact that the proportion of immigrants having independent means is rapidly increasing is even more important for the future economic development of the country than is the increase in the actual number of immigrants. Jewish immigrants in 1926 totaled 3395 while the emigrants numbered 6978. See JEWS.

EDUCATION. There are 314 schools maintained by the Government, which are attended by 19,937 pupils. The Government also maintains training colleges for teachers. To a very large extent the Christian and Jewish communities provide for the education of their children in schools supported by the church. The Zionist Organization controls 177 schools attended by 17,174 pupils, and other Jewish bodies control schools attended by 9307 pupils, making a total of 255 Jewish schools attended by 26,481 pupils. There are 183 Christian schools attended by 15,145 pupils. There are also about 50 Moslem schools privately maintained by local committees, which provide for about 3500 schools. Most of the non-government schools receive a grant-in-aid on a per capita basis. There is a Hebrew university in Jerusalem, which was opened in 1925.

PRODUCTION, ETC. The orange crop, which constitutes the principal export item, totaled 2,214,000 cases during 1926-27, as compared with 1,515,000 cases in 1925-26 and 2,146,500 cases in 1924-25. There has been a steady expansion of area under orange cultivation, especially around Jaffa, and a large increase in the export of this fruit was expected in the near future. Experiments were carried on during the year with a view to developing the export of grapes. Cereal returns were reported to have compared favorably with the previous year, large increases being recorded for durra and sesame and average returns for wheat and barley. Gradual progress was made along industrial lines during the year. Certain industries were aided by a new customs tariff, which either reduced or abolished the duty on many materials used in manufacture. The limited purchasing power of the population, however, continued to retard the development of industries entirely dependent upon the home market, but industries which export a part of their production were favored by an increased demand from nearby markets, as Syria and Egypt. This increase was chiefly in leather, cement, textiles, olive oil, and soap. A few small manufacturing plants, mainly those making biscuits and candy, made progress on the local market in competition with foreign products. Various new enterprises were launched during the year. As most of the industries are small and their working capital limited, the increased activity has only had a slight effect on the national economic structure. Their sustained operations, however, absorbed some of the labor released from building operations.

The government monopoly on salt was abolished Nov. 1, 1927, and mining of rock salt was begun at the southern end of the Dead Sea by a local concern, with a view to supplying the Palestine market. The damage sustained from earthquakes during July (see YEAR BOOK for 1927) created an urgent demand for emergency funds and had a temporarily unfavorable effect on economic conditions. Work was started during the latter part of 1927 on the Jordan hydro-electric concession, which covers the exclusive utilization of the Jordan and Yarmuk rivers for

hydro-electric purposes, and involves the construction of dams, reservoirs, canals, pumping stations, etc. The project is an important factor in the economic progress of the country, since it would aid industrial development that was handicapped by the necessity of importing all fuel. A concession for the exploitation of the mineral wealth of the Dead Sea was agreed to in principle during 1927. The mineral resources of the country had not been fully investigated, but preliminary surveys indicated that the Dead Sea deposits represent at present the country's most valuable mineral asset considered from a commercial point of view.

COMMERCE. Foreign trade in 1927 was marked by an increase of 43 per cent over 1926 in value of exports, including specie shipments, and a small decline in imports for consumption. The imports were valued at \$31,339,416 in 1927 as compared with \$32,089,436 in 1926; the exports at \$9,251,400 and \$6,422,700, respectively. Imports of boots, shoes, and leather, coal, wood for orange cases, olive oil (unrefined), and confectionery showed increases over 1926; most of the other items registered decreases. The principal commodities increasing in exports were oranges, laundry soap, edible oils, sesame, durra, barley, cement, raw wool, and watermelons. Egypt furnished 28.39 per cent of Palestine's imports: the United Kingdom, 13.71; Syria, 14.26; Germany, 9.02; France, 5.7; Italy, 4.85; the United States, 4.3. The United Kingdom took 34.75 per cent of Palestine exports, followed by Egypt, with 29.1 per cent; Syria, 13.72; France, 5.89; Germany, 4.75; the United States, 1.61 per cent.

Imports from the United States were valued at \$1,335,400 as compared with \$1,670,000 in 1926. Wheat flour and automobiles constitute the principal imports from the United States. Exports to the United States amounted to \$231,000 in 1927 and \$202,000 in 1926. These exports consist chiefly of raw wool, curios, rugs, and citrons.

FINANCE. The financial statement of the Government for the period April 1–December 31, 1927, showed receipts totaling £P1,739,400 and expenditures reaching £P1,944,400, thus producing a deficit of £P205,000. Approximately £P346,500 were spent on public works, as compared with an estimate of £P145,800; this extra work, although not of an urgent nature, was undertaken with a view to ameliorating the unemployment situation. Returns from customs, excise, and port dues showed a small decrease from the previous year, attributed in part to exemption of local industry from import duties on certain raw materials, including cotton and yarns of linen, jute, hemp, and flax, corkwood, offal of olive oil, etc. The new currency, based on the pound sterling, was introduced on Nov. 1, 1927, and is guaranteed by both the British and Palestine governments. This currency is entirely covered by British securities. The Palestine pound, as the new unit is called, is divided into 1000 mills, and replaces the Egyptian currency hitherto in local circulation, estimated at between £E1,500,000 and £E2,000,000. The exchange of currency was completed by Mar. 31, 1928.

COMMUNICATIONS. During 1927, 2626 vessels of 1,605,713 tons entered from foreign ports. The railway lines totaled slightly over 737 miles and were all operated by the Government.

GOVERNMENT. The country is administered by Great Britain under a mandate of the League of

Nations. Under the constitution adopted on Sept. 1, 1922, executive power is vested in a High Commissioner and an executive council, and legislative power in a body of 22 members besides the High Commissioner, consisting of 10 official and 12 unofficial members. The latter are elected and there must be not less than two Christian and two Jewish members. This legislative council has not been elected as yet because of the absence of the Arabs from political affairs. The Jewish population has an unofficial elected National Committee to represent the Jewish population in its dealings with the administration. The British Government and the Palestine administration recognize the World Zionist Organization which in Palestine is represented by the Palestine Zionist Executive, as the agency of the Jewish people in all matters pertaining to the upbuilding of the Jewish National Home. High Commissioner in 1927, Field-Marshal Lord Plumer (appointed July 1, 1925).

HISTORY. Palestine experienced a year of comparative quiet, no disturbing items appearing in the press during the period under survey. Lord Plumer was succeeded by Sir Robert Chancellor as High Commissioner. For a discussion of the Zionist movement, consult the article, **JEWS**.

PALESTINE EXPLORATION FUND. See **ARCHAEOLOGY**.

PANAMA. A republic of Central America, lying between Costa Rica and Colombia, constituting an independent State after November, 1903; formerly a department of Colombia. Capital, Panama.

AREA AND POPULATION. Panama has an extreme length of 480 miles, and its width varies from 37 to 110 miles. The area is estimated at 32,380 square miles; population, according to the census of 1923, 442,522. The natives are a mixed race, combining Spanish, Indian, and Negro blood. The larger cities are Panama, the capital, 59,458; Colon, 31,203. The movement of population in 1925 was: Births, 12,013; deaths, 6020; marriages, 589. Of the births, 8617 were illegitimate.

EDUCATION. Primary instruction is free and compulsory for all children from 7 to 15 years of age. There were 86,266 children of school age in 1927 and 62,984, or 74 per cent, were attending school. There were 446 primary schools in 1926, with 1492 teachers and an enrollment of 54,214 pupils; the number of private schools reached 71 with an enrollment of 9156 pupils; and the enrollment in the night schools for adults was 1345. The number of students enrolled in the National Institute had attained the number of 1573.

PRODUCTION. Although the soil of Panama is very rich, only a small part of it is properly cultivated. The principal agricultural products are bananas, cacao, coconuts, coffee, rubber, sugar, tobacco, and sarsaparilla. Mahogany and other woods are produced. Cattle raising is successfully carried on. Banana growers enjoyed a fairly prosperous year in 1927, the total exports from the Republic amounting to 4,623,000 bunches, valued at \$2,987,000, as compared with 4,531,000 bunches, valued at \$2,632,000 in 1926. This increase was owing to greater production in the comparatively new area on the watershed of Gatun Lake. The coffee production for 1928 was estimated at 1,800,000 pounds, or twice as large as in 1927, and 500,000 pounds greater than in 1926. Mining and manufacturing are relatively unimportant.

Small quantities of manganese and gold are produced. Manufacturing is confined largely to articles for local consumption.

COMMERCE. The reported imports in 1927 (\$14,516,000) were slightly greater than in 1926 (\$14,289,000). The importance of transit shipments is indicated by the fact that of the exports from the United States to Panama in 1927 (according to United States statistics), valued at \$34,051,000, about \$15,000,000 was for the Republic proper and \$10,000,000 for the Canal Zone; the remainder was probably to be accounted for by trans-shipments to other Latin-American countries. It was estimated that purchases by zone employees, tourists, and travelers account for approximately half of the imports of the Republic proper. The reported exports of Panama are normally only one-fourth or one-fifth of the imports, but this is owing in part to undervaluation and to failure to report many goods going into the Canal Zone for local use. Bananas make up from 60 to 70 per cent of the exports.

FINANCE. Panama operates under a biennial budget. The proposed budget for 1927-29 balanced at \$14,302,488. In December it was reported that the proposed budget for 1929-31 would amount to \$15,600,000. Of this amount estimates of customs revenue accounted for \$5,400,000; stamps and stamped paper, nearly \$2,000,000; taxes on retail liquor sales, \$1,200,000; and taxes on cattle slaughter, approximately \$500,000. The public debt on Oct. 1, 1927, exclusive of bonds of the National Bank guaranteed by the Government, totaled \$13,491,000, as compared with \$11,049,000 on June 30, 1926. The bulk was external debt amounting to \$10,333,500. Most of the internal debt is floating.

COMMUNICATIONS. There were in 1928 about 311 miles of railway in Panama including the Canal Zone. The principal line is the Panama Railroad, with a length of 158 miles, owned and operated by an American corporation. During 1926-27 this line carried 496,000 passengers, 302,000 tons of freight, and had gross receipts of \$5,748,000, of which \$3,721,000 was for the operation of rail traffic and \$2,027,000 was for steamship traffic. There are 96 post offices; 4206 miles of telegraph wire; 22,344 miles of telephone wire, and 7866 instruments; 346 miles of highway; and 4584 automobiles registered.

GOVERNMENT. Under the constitution adopted Feb. 13, 1904, and amended Dec. 26, 1918, executive power is vested in the President elected for four years and ineligible for a succeeding term; and legislative power in a chamber of deputies of 46 members, elected for four years. President in 1928, Rodolfo Chiari, assumed office, Oct. 1, 1924.

HISTORY. The outstanding event in Panama in the course of the year was the election of a president to succeed Rodolfo Chiari. The Liberal party, of which President Chiari is the leader, nominated Florencio H. Arosemena and the Conservative party, led by former President Porras, nominated Dr. Jorge Boyd. The issues were rather clouded, the whole campaign revolving around a desire on the part of the "ins" to stay in and the "outs" to get in. Dr. Porras appealed to the United States Government to supervise the elections to be held in August in a manner similar to that pursued in Nicaragua, but Secretary of State Kellogg refused on the grounds that the American Government expected the Panamanian Government to maintain its own order and to carry out a fair election. The Conservative party

declared that this was merely another indication that the United States was keenly interested in the keeping of the Liberals in power because Washington hoped thereby to have the treaty (discussed in the preceding YEAR BOOK) ratified. Just before election day on August 5, Dr. Porras, the Conservative leader, issued a proclamation to his followers to abstain from voting. Apparently his position was upheld by the members of the Conservative party because Florencio H. Arosemena was elected by a large majority.

The new president was an engineer by profession, born in Panama City in 1872, and educated in his native land and in Germany and Switzerland. He practiced his profession both in Europe and in several South American countries. Although he did not hold public office, except for a brief period as member of the municipal council of Panama, he was a strong member of the Liberal party and an ardent supporter of President Chiari. President Arosemena was inaugurated on October 2. Dr. Ricardo J. Alfaro, Dr. Carlos Lopez, and Eduardo Chiari were nominated as presidential designates for the Arosemena administration. On November 3, the twenty-fifth anniversary of the independence of Panama was celebrated throughout the country.

PANAMA CANAL. During the calendar year 1928, 6334 commercial vessels, an average of 17.31 daily, passed through the Panama Canal, carrying 29,401,581 tons of cargo. Their net tonnage was 28,943,437, and the tolls amounted to \$26,375,962.41. The commerce of the year was second only to that of the fiscal year of 1928, which ended June 30, when 6456 transits brought \$26,944,499.77 in tolls. The previous record had been set during the calendar year of 1927, in which 6085 vessels, with cargoes of 29,102,538 tons, and a net tonnage of 28,610,984 paid \$26,231,022.94.

Vessels of 23 nationalities made up the total commercial traffic through the Panama Canal during the calendar year 1928. Forty-one and eight-tenths per cent of the total commercial transits were vessels of the United States; 28.7 per cent were British vessels; and the remaining 29.5 per cent were distributed among the other 21 nationalities. The accompanying tabulation shows the total commercial traffic through the Canal during the calendar year 1928, segregated according to the nationality of vessels, together with corresponding totals for the calendar years 1927, 1926, and 1925.

The number of tank ships decreased, however, during the calendar year 1928, due, it was thought, to development of oil production on the Atlantic seaboard. The combined net tonnage of the 981 tank ships passing through the Canal was 5,306,038, and they carried 4,954,422 tons of cargo, chiefly crude petroleum and gasoline, paying tolls of \$4,638,012.34. These oil shipments comprised 15.5 per cent of the commercial transits of the year, compared with 21.9 per cent in 1927; 18.3 per cent of the net tonnage, compared with 26.6 per cent of the previous year; 17.6 per cent of the tolls, compared with 25.4 per cent; and 16.9 per cent of the total cargoes, compared with 24.3 per cent. Compensating for the decline in tank ships, the wheat shipments were more than doubled during the fiscal year of 1928, becoming the third most important export, after mineral oils and lumber. Of the 3,035,884 tons of wheat, over 96 per cent of which was consigned to the United Kingdom or Continental

PANAMA CANAL TRANSITS IN 1928
[From Panama Canal Record]

Nationality	No. of ships	Panama Canal net	Tonnage		Tolls	Tons of cargo
			United States equivalent	Registered Gross Net		
Argentine	1 ^a	.....	.....	.....	\$1,274.50	.....
Belgian	15	74,950	61,122	96,397	56,689	83,006
British	1,816 ^b	8,961,796	6,761,405	10,982,161	6,773,172	8,014,548.86
Chilean	30 ^c	126,355	94,399	196,081	106,796	118,449.20
Colombian	104	42,044	37,482	61,937	38,319	44,500.57
Costa Rican	2	108	108	201	111	81.00
Cuban	1	194	194	176	136	242.50
Danish	79	335,226	256,594	399,579	254,318	308,408.57
Danzig	29	186,265	151,847	256,222	144,294	161,406.81
Dutch	143	647,417	455,057	756,078	454,611	558,596.04
Finnish	6	13,680	13,643	14,537	11,340	15,585.00
French	119 ^d	553,950	436,467	698,805	428,595	549,546.28
German	377	1,262,714	893,959	1,475,300	884,960	1,102,157.76
Greek	42	163,574	121,634	187,806	117,607	136,094.14
Italian	87	478,979	373,754	617,066	376,434	447,230.43
Japanese	180	890,460	782,083	1,134,688	763,954	916,602.27
Norwegian	307	1,178,383	889,747	1,442,958	877,405	1,047,772.82
Panamanian	84	84,572	55,955	108,439	69,112	64,579.41
Peruvian	51 ^e	127,757	74,716	185,665	98,074	93,271.55
Spanish	41	151,403	125,757	206,481	126,601	149,741.20
Swedish	124	550,015	398,117	1,010,596	481,214	456,052.00
United States	2,648	12,911,765	10,076,204	16,278,254	10,046,686	11,933,632.74
Yugo-Slavic	48	201,880	157,910	250,274	158,078	186,937.33
Totals, 1928	6,334	28,943,437	22,217,654	36,359,701	22,268,506	26,375,962.41
Totals, 1927	6,085	28,610,984	22,360,998	36,381,124	22,353,512	26,231,022.94
Totals, 1926	5,420	25,836,241	20,254,503	33,044,274	20,329,791	23,901,540.04
Totals, 1925	4,774	22,958,158	18,141,695	29,368,840	18,228,704	21,380,759.70

^a Naval vessels of 2,549 displacement tons. ^b Includes 13 naval vessels with total displacement of 60,911 tons. ^c Includes 2 naval vessels with total displacement of 4,174 tons. ^d Includes 3 naval vessels with total displacement of 35,400 tons. ^e Includes 2 naval vessels with total displacement of 1,000 tons.

Europe, 1,901,241 tons came from Canada, 1,124,588 from the United States, 5144 from South America, and 4911 from other areas. Canada, with large crops in Alberta, and improved grain facilities at Vancouver, increased her wheat export of 1927 by 1,183,321 tons.

From the time the Panama Canal was opened to traffic, Aug. 15, 1914, until the end of 1928, 50,018 ships passed through, with a net tonnage of 218,869,099, carrying 230,115,595 tons of cargo, and paying a total of \$206,671,023.06 in tolls.

PANAMA CANAL ZONE. The strip of land five miles wide on each side of the Panama Canal granted to the United States in the treaty of Nov. 18, 1903. Area, 554 square miles, of which 163½ are taken up by Gatun Lake; civil population, June 30, 1927, 27,624, of whom 7461 were Americans. The above-mentioned treaty provided that the cities of Panama and Colon were to remain within the jurisdiction of Panama, but the United States was to have control over both the cities and their harbors in matters pertaining to sanitation and quarantine. The status of the zone is that of a military reservation under the Governor of the Panama Canal, appointed by the President of the United States. Governor in 1928, Col. Meriwether L. Walker, U. S. A. See PANAMA CANAL.

PAN-AMERICAN CONFERENCE. The sixth Pan-American Conference met in Havana, Cuba, January 16 to February 20, with the Hon. Antonio de Bustamante of Cuba, a member of the International Court of Justice, as presiding officer. By a vote of 16 to 5 (nations), the sessions of the Conference and of the Committees were opened to the public. The Hon. Charles Evans Hughes, chairman of the American delegation, was vice chairman of the Conference. The members of the American delegation were Dwight W. Morrow, Ambassador to Mexico;

Henry P. Fletcher, Ambassador to Italy; Noble Brandon Judah, Ambassador to Cuba; Charles E. Hughes, Chairman; Ray Lyman Wilbur, President of Leland Stanford University; Judge Morgan J. O'Brien; Senator Oscar W. Underwood, of Alabama; Dr. L. S. Rowe, Director-General of the Pan-American Union, and Dr. James Brown Scott, of the Carnegie Institute. The first of these conferences met in Washington in the winter of 1889-90; the second, in Mexico City in 1901; the third, in Rio de Janeiro in 1906; the fourth, in Buenos Aires in 1910; the fifth, in Santiago, Chile, in 1923. They all have contributed to the upbuilding of Pan-Americanism, which may be said to date from 1826 when, upon the initiative of Simon Bolivar, an attempt was made to organize at Panama a conference of envoys from republics of the Western World "to deliberate upon objects of peculiar concernment in this hemisphere." This early effort to cooperate in the Western World found expression in Henry Clay, who was known as "the most determined champion in the United States of the Latin-American nations"; in the work of John Quincy Adams, and, much later, in the energetic initiative of James G. Blaine, who, as Secretary of State in the Cabinet of President Benjamin Harrison, planned in 1889 the conference "to consider and discuss methods of preventing war between the nations of America," which conference began the series of which the Havana session was the sixth.

In the views of many, the outstanding features were the welcome accorded President Coolidge and his address at the inaugural session. In it he went back to the olden days and paid tribute to the sturdy pioneers who sought out the land "where God might write anew the story of the world." He urged upon the delegates that they "most of all must be guided by patience, tolerance, and charity." He pointed out that "a

Divine Providence has made us a neighborhood of republics." Finally, in a fervent peroration, the President said:

The light which Columbus followed has not failed. The courage that carried him on still lives. They are the heritage of the people of Bolivar and of Washington. We must lay our voyage of exploration toward complete understanding and friendship. Having taken that course, we must not be turned aside by the fears of the timid, the counsels of the ignorant, or the designs of the malevolent.

With law and charity as our guides, with that ancient faith which is only strengthened when it requires sacrifices, we shall anchor at last in the harbor of justice and truth. The same Pilot which stood by the side of the great discoverer, and the same Wisdom which instructed the founding fathers of our republics, will continue to abide with us.

In the course of the President's address he declared:

It is a high example that we have set for the world in resolving international differences without resort to force. If these conferences mean anything, they mean the bringing of all our people more definitely and more completely under the reign of law. After all it is in that direction that we must look with the greatest assurance for human progress.

We can make no advance in the realm of economics, we can do nothing for education, we can accomplish but little even in the sphere of religion, until human affairs are brought within the orderly rule of law. The surest refuge of the weak and the oppressed is in the law. It is preëminently the shield of small nations. This is necessarily a long, laborious process, which must broaden out from precedent to precedent, from the general acceptance of principle to principle.

New activities require new laws. The rules for the governing of aviation are only beginning to be considered. We shall make more progress in the end if we proceed with deliberation. No doubt you will find in your discussions many principles that you are ready to announce as sound and settled rules of action.

Among some of the more striking statements which were widely quoted were:

It is better for the people to make their own mistakes than to have some one else make their mistakes for them.

We are thoroughly committed to the principle that they are better fitted to govern themselves than anyone else is to govern them.

All nations here represented stand on an exact footing of equality. The smallest and the weakest speaks here with the same authority as the largest and the most powerful.

We realize that one of the most important services which we can render to humanity, the one for which we are peculiarly responsible, is to maintain the ideals of our Western World.

What happens in this hemisphere is of more vital interest to all of us than what happens across any of the oceans.

The greater a nation becomes in wealth and production, the more it has for the service of its neighbors, the larger its markets for the goods of others.

In his plea for the orderly rule of law, President Coolidge sounded really the keynote of the Conference. Dr. Rafael Martinez Ortiz, Secretary of State for Cuba, laid particular emphasis on this point, and in his address opening the First Plenary Sessions he quoted from the utterances of two Latin-American statesmen who had urged the rule of law instead of the rule of force. It was an interesting coincidence that one of these was Ignacio Mariscal, Mexican Minister of Foreign Affairs, who spoke to the Second Pan-American Conference of the "efforts directed toward obtaining among men the predominance of justice and the banishment of force as a substitute for law." Another was from Victoriano de la Plaza, Argentine Minister of Foreign Affairs, who spoke hopefully of the passing of the era of "political dissensions that gave opportunity for such unfavorable opinion against the aptitudes for self-government and proper administration of the republics of Latin-American origin."

Dr. Antonio S. de Bustamante, the president of the conference, stressed particularly the need for a rule of law in the Americas, and referred to the world's two great forces, saying:

Each individual, like each nation, has in reserve two enormous forces which have moved humanity since the beginning of existence—love and hate. The latter is a destructive power the most serious manifestations of which are, in national societies, crime, and in international society, war.

The other is a constructive force less visible but more sweet, more permanent but less clamorous. With love has been achieved everything noble that exists upon the earth.

Mr. Hughes's blunt statement that "we have no policy of aggression" toward the Latin-American republics, and that we intend to withdraw from Haiti and Nicaragua "as soon as it is possible" was appraised as "decidedly the most important and constructive pronouncement of the conference."

At a dinner given by the American Chamber of Commerce in Havana, Mr. Hughes said:

Pan-Americanism rests upon four pillars.

The first is independence. It is the firm policy of the United States to respect the territorial integrity of the American republics. We have no policy of aggression.

The second pillar of Pan-Americanism is stability. Independence is not enough. Independence gives opportunity, but stability is essential to take advantage of it. It is our desire to encourage stability in the interest of independence.

The third pillar of Pan-Americanism is mutual good will.

The fourth pillar is coöperation. Coöperation among the Pan-American States does not mean the organization of a superstate. It does not mean that any of the twenty-one American republics, or any group of these republics, will attempt to dominate others. It is the coöperation of equals for common advantage in those directions where there is prospect of success.

Eight commissions were appointed, among which the work of the Conference was divided: Organization of the Pan American Union; Codification of Public International Law; Codification of Private International Law; Problems of Communications; Intellectual Coöperation; Economic Problems; Social Problems; and the Reports on Treaties, Conventions, and Resolutions.

The second commission, of course, had the vital task—that of working out the programme of the orderly rule of law among the republics of the New World. Former Secretary Hughes was made senior member of the group representing the United States. Assigned to assist him were Henry P. Fletcher, Senator Underwood, and James Brown Scott. The other republics assigned men of equal standing to this vitally important commission. Argentina named Honorio Pueyrredon, its Ambassador to Washington, who subsequently resigned from the Conference and as Ambassador, because the Conference would not put itself on record against high protective tariffs in Pan-America. Brazil selected Rail Fernandes, former delegate to the League of Nations; Costa Rica, Ricardo Castro Beeche, Foreign Minister; and El Salvador, Gustavo Guerrero, Foreign Minister. Each was head of his country's delegation.

If diplomatic tact, an appreciation of the feelings of the other American republics, and a readiness to accept a modest rôle in the organization of conference machinery are sufficient to place relations between the United States and Latin America on a sound basis of mutual understanding, then the attitude adopted by the United States



Wide World Photos

PRESIDENT COOLIDGE ADDRESSING THE PAN-AMERICAN CONFERENCE

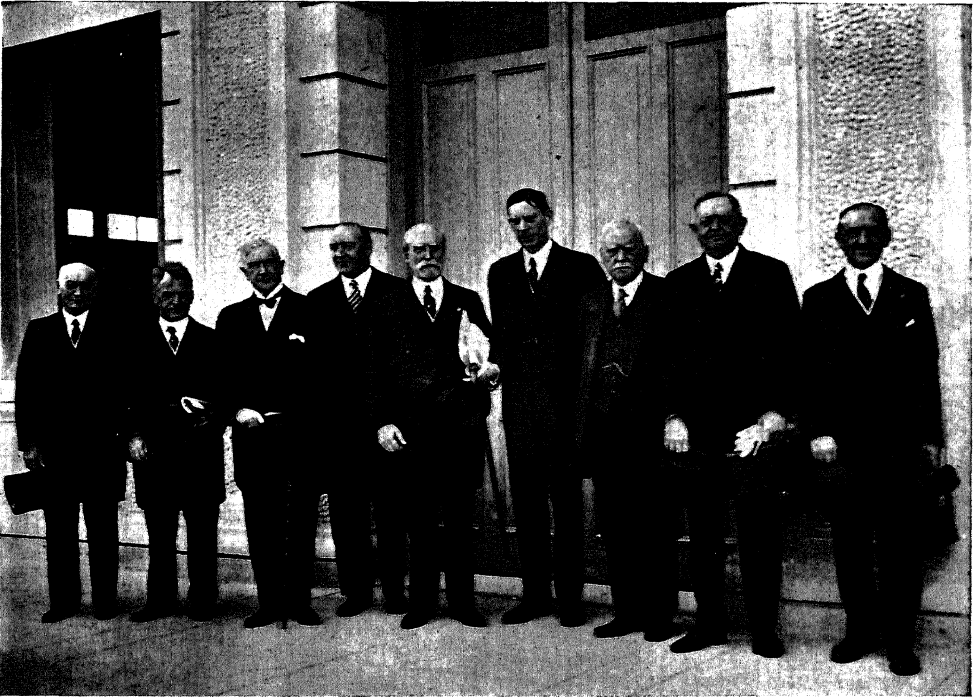


Photo by Underwood & Underwood

DELEGATES REPRESENTING THE UNITED STATES

LEFT TO RIGHT: JAMES B. SCOTT; DWIGHT W. MORROW, AMBASSADOR TO MEXICO;
HENRY P. FLETCHER, AMBASSADOR TO ITALY; NOBLE BRANDON JUDAH, AMBAS-
SADOR TO CUBA; CHARLES E. HUGHES, PRESIDENT OF THE DELEGATION AND
VICE PRESIDENT OF THE CONGRESS; MORGAN WILBUR; JUDGE MORGAN
J. O'BRIEN; UNITED STATES SENATOR OSCAR W. UNDERWOOD; AND
DR. L. S. ROWE, DIRECTOR GENERAL OF THE PAN-AMERICAN UNION

PAN-AMERICAN CONFERENCE AT HAVANA

delegation at Havana materially advanced those ends. This was the opinion of the Foreign Policy Association.

That the United States was anxious to dispel suspicion of its motives was obvious. At the opening sessions, Mr. Hughes showed a willingness to conform to the wishes of the other nations as to what subjects should be discussed and he tactfully declined the chairmanship of important committees.

In his address to the American colony in Havana, January 21, Mr. Hughes voluntarily raised the vexed question of Nicaragua, saying, "We are at the moment in Nicaragua, but what we are doing there and the commitments we have made are at the request of both parties and in the interest of peace and order and a fair election." The conciliatory and tactful diplomacy of the American delegation had its effect. Questions which, if barred by the United States, would have aroused indignation and distrust, assumed a mild form in open discussions.

The Mexican proposal amending certain articles of the convention for organizing the Pan American Union on a treaty basis was widely interpreted by American correspondents as an attack on the policies of the United States. Actually, however, the proposal upholds the one point on which the United States has insisted above all others, namely, that "in no case shall the Pan American Union be given political functions." In addition to this amendment, only three of the seven points proposed by Mexico are of particular significance:

1. That the American republics be not necessarily represented at the Pan American Union by their diplomatic representatives at Washington.

2. That the posts of chairman and vice chairman of the Governing Board be held in turn, according to alphabetical order, by each of the representatives of the Latin-American republics.

3. That the post of Director-General be held in turn by the chairmen of the Pan-American committees established in the American republics, according to alphabetical order.

The first point was raised by Costa Rica at the meeting of the Conference in 1923, on the ground that states not recognized by the United States could not be members of the Union as long as the Governing Board is made up of the diplomatic representatives accredited to Washington. A compromise solution was agreed upon: Every government was to enjoy representation in the Union "as a right," but the Governing Board was to be composed, as heretofore, of the diplomatic representatives accredited to Washington and the Secretary of State of that country.

Mr. Hughes without directly referring to the Mexican proposals, explained that the United States desired the Pan American Union to be organized in the way "our friends of the other republics wish it to be organized." He was indifferent, he said, as to what was done in regard to the election of the chairman of the board (who has always been the Secretary of State), but he pointed out the difficulties in the way of having the American republics represented in the Union except by the heads of their diplomatic missions in Washington. He indicated that the post of Director-General of the Union required continuity, and could not be as effectively administered if it was to be held in turn by different individuals. In no case did he express open op-

position to any of the suggested amendments.

For Pan-American Conference at Washington see BOLIVIA.

PAN-AMERICANISM. The outstanding event of the year was the Sixth International Conference of American States at Havana, January 16 to February 20 (see PAN-AMERICAN CONFERENCE). One of the most important topics on the agenda of the conference was the organization of the Pan American Union on the basis of a convention. Heretofore, its activities had been governed by resolutions adopted at successive conferences. The conference adopted the draft of a convention prepared by the Governing Board, which, however, did not make any radical changes in the organization of the Pan American Union. Briefly summarized, the changes introduced are:

(1) A provision that the Governing Board should be composed of the representatives that the governments of the American republics may wish to appoint; it being provided, however, that the appointments may devolve upon the diplomatic representatives of the respective countries at Washington.

(2) A specific declaration that neither the Governing Board nor the Pan American Union shall exercise functions of a political character.

(3) A provision that the instruments of ratification of the treaties, conventions, protocols, and other diplomatic instruments signed at the International Conferences of American States shall be deposited at the Pan American Union, which shall communicate notice of the receipt of such ratifications to the other States.

(4) That, wherever possible, the Governing Board shall establish relations of close cooperation between the Pan American Union and other official Pan-American organizations.

(5) That the Governing Board shall fix the status of the members of the staff of the Union, determining their salaries and conditions of retirement.

(6) That the member states may withdraw from the Pan American Union at any time, but shall pay their respective quotas for the period of the current fiscal year.

It is provided in Article XIV of the convention that it shall become effective when the States represented at the conference receive notice that all the ratifications have been deposited with the Pan American Union. Realizing that some time must inevitably elapse before the convention was ratified by all the members, and desirous of putting into immediate effect some of the more important modifications, the conference adopted a resolution containing provisions to be effective provisionally pending the approval of the convention by all the republics of the American Continent. This resolution put into immediate operation the more important modifications including the changes relative to the membership of the governing board; the declaration that neither the Governing Board nor the Pan American Union shall exercise functions of a political character; the provision relating to the determination of the conditions of retirement of the members of the staff; and the provision that the States members of the Union may withdraw from the organization at any time, but that they shall pay their respective quotas for the period of the current fiscal year.

The resolutions adopted at the Havana Conference added considerably to the responsibilities of the Union. These new duties may briefly be summarized as follows:

(1) Duties relating to the calling of conferences of a special or technical character.

(2) Duties of an educational and cultural nature and those relating to social problems.

(3) Special investigations and securing data.

(4) Obligations relative to the deposit of ratifica-

tions of conventions and notification thereof to the States, members of the Union.

(5) Duties relating to the Seventh International Conference of American States to assemble at Montevideo in 1933.

After the adjournment of the Havana Conference, the Pan American Union labored to give effect to the resolutions of the conference, and considerable progress was made in this respect. The steps taken and the results accomplished were the subject of a special report submitted by the Director-General, Dr. L. S. Rowe.

In addition to the Sixth International Conference of American States held at Havana, a number of other important conferences of a Pan-American character have been held.

Pan-American Commission on Consular Procedure, recommended by the Third Pan-American Commercial Conference, convened at the Pan American Union in Washington on Oct. 10, 1927, and continued in session until October 24, with representatives of all the states members of the Union in attendance. The purpose was to consider the simplification and standardization of consular procedure in the American republics. Constructive conclusions were reached which were submitted to the Governing Board of the Union and in turn transmitted to the governments for the information of their delegates to the Havana Conference which approved the conclusion of the commission and recommended that they be adopted by all the governments. At the same time the Havana Conference recommended that another meeting of the commission be held to consider the subject of consular fees.

The Eighth Pan-American Sanitary Conference assembled at Lima, Peru, from Oct. 12 to 20, 1927, with representatives of eighteen countries in attendance. The Conference adopted twenty-eight resolutions and a protocol to the Pan-American Sanitary Code, clarifying the procedure to be followed with respect to ratifications of the code. It was decided that the Ninth Pan-American Sanitary Conference should be held in Buenos Aires during 1930. The personnel of the Pan-American Sanitary Bureau was reconstituted at Lima as follows: Dr. Enrique Paz Soldan, of Peru, Honorary Director; Dr. Hugh S. Cumming, Surgeon-General of the United States Public Health Service, Director; Dr. Mario G. Lebreto, of Cuba, Vice Director; and the following members of the Board: Dr. Solon Nunez, of Costa Rica, Dr. Ramon Baez Soler, of the Dominican Republic, Dr. Justo F. Gonzalez, of Uruguay, Dr. João Pedro de Albuquerque, of Brazil.

The Fifth Pan-American Child Welfare Congress, with official delegates from fourteen republics of the American Continent in attendance at Havana, met December 13. One hundred and twenty resolutions were adopted by the Congress, one of the most important commending the inauguration of the American Institute for the Protection of Childhood in Montevideo, and recommending that it receive the support of the American governments that have not yet adhered. The Sixth Congress was to be held at Lima, Peru, in 1929.

The First Pan-American Conference on Eugenics and Homoculture was convoked in compliance with a resolution of the Fifth International Conference of American States, and met at Havana from Dec. 21 to 23, 1927. Delegates from fifteen republics took part. A number of important resolutions were adopted, one provid-

ing for the establishment in Havana of a Pan-American Bureau of Eugenics and Homoculture. It was decided that the Second Conference should meet at Buenos Aires at the same time as the Ninth Pan-American Sanitary Conference.

During the first six months of its fiscal year, much attention was given by the Union to the preparations for the Havana Conference. To supplement the programme of the Conference prepared by the Governing Board, the Union published a comprehensive handbook for delegates, containing a history of the preceding Conference together with data on all the questions included in the programme of the Havana Conference. In addition a series of monographic publications containing documentary material for the use of delegates was issued on the following topics:

- a. Conclusions of the Inter-American Electrical Communications Conference.
- b. Convention on Literary and Artistic Copyright, signed at the Fourth International Conference of American States.
- c. Resolutions of the First Pan-American Congress of Journalists.
- d. Convention on the Protection of Trade Marks, 1910, and Convention for the Protection of Commercial, Industrial, and Agricultural Trade Marks and Commercial Names, 1923.
- e. Resolutions of the First and Second Pan-American Standardization Conferences.
- f. Conclusions of the First Pan-American Conference of National Directors of Public Health.
- g. Conclusions of the First and Second Pan-American Red Cross Conferences.
- h. Resolution on Principles and Procedure in Public Health Administration, adopted at the Fifth International Conference of American States.
- i. Conclusions of the First Pan-American Congress of Highways.
- j. Report on the Development of Methods for the Pacific Settlement of International Disputes.
- k. Projects on International Law, formulated by the International Commission of Jurists.
- l. Report of the Pan-American Railway Committee.
- m. Project of Convention on Commercial Aviation, formulated by the Governing Board on the basis of the Conclusions Adopted by the Inter-American Commission on Commercial Aviation.
- n. Final Act of the Pan-American Commission on the Simplification and Standardization of Consular Procedure.

The practical services performed by the Union were greatly strengthened by the four special series recently established dealing with the following subjects: Agriculture, Education, Public Health and Social Welfare, and Finance, Industry, and Commerce. To these pamphlets, published in Spanish and Portuguese, the widest possible circulation was given and they were found helpful to educators, agriculturalists, exporters, and importers, as well as to those interested in public health matters. See PAN AMERICAN UNION.

A Division of Agricultural Coöperation was established in May. Even in the brief period of its existence it had been called into consultation and has replied to inquiries concerning various problems of cultivation and plant pests. Most of the work of the division had been directed toward establishing contacts with departments of agriculture in the different countries of America, with institutes of agricultural studies and research, experiment stations, magazines, and newspapers of both official and private character devoted to agriculture.

INTER-AMERICAN COMMISSION OF WOMEN. Seven members of the Inter-American Commission of Women to study the civil and political status of women in the countries of the American continents, were appointed by the Governing Board of the Pan American Union on April 4th. Miss Doris Stevens of the United States, chair-

man of the Committee on International Action of the National Women's Party, was designated chairman of the commission. The other members, drawn by lot were Panama. Señorita Clara Gonzales, LL.B.; Venezuela, Señora Lucila L. de Pérez Díaz; Argentina, Dr. Ernestina A. de Lopez Nelson; Salvador, Señora Maria Álvarez de Guillén-Hivas; Colombia, Señora María Helene de Hinestrosa; Haiti, Mme. Téliigny Mathon.

The action of the Governing Board was pursuant to a resolution adopted at the Sixth International Conference of American States at Havana, which contemplated a commission of women composed of one representative from each of the twenty-one republics of the American continents, the first seven to be selected by the Governing Board of the Pan American Union and these in turn to appoint the representatives of the other fourteen countries. The purpose of the Commission was to prepare the juridical and other information that might be necessary to enable the Seventh International Conference of American States to undertake a study of the civil and political equality of women on the American continents.

The Pan-American Conference on Conciliation and Arbitration met in Washington in December and devoted considerable effort to bringing about an amicable settlement of the situation which grew out of a boundary dispute between Bolivia and Paraguay which reached a crisis at the time of the Conference. For a time there seemed to be little hope of averting hostilities and the Bolivian representative withdrew from the meeting but was later authorized by his Government to return. A special committee was appointed by the Conference for the purpose of finding peaceful means of adjusting the differences and both countries finally accepted an offer to mediate the dispute; a protocol was drawn up by the commission, providing machinery for the investigation of the clashes which took place at Fort Vanguardia on December 6, and at Fort Galpon Boqueron on December 16, although up to the end of the year no action was taken to clear up the more important question of the boundary controversy.

PAN AMERICAN UNION. An international organization maintained by the 21 American republics for the development among them of good understanding, friendly intercourse, commerce, and peace. It is controlled by a Governing Board composed of the Secretary of State of the United States and the diplomatic representatives in Washington of the other republics, and is administered by a director-general and assistant director chosen by this board.

During the year a number of important conferences of a Pan-American character were held. See **PAN-AMERICAN CONFERENCES**, and **PAN-AMERICANISM**. The Union also followed its usual custom of furnishing illustrated material and programmes of study for stimulating the study of Latin-American history and culture in the schools of the United States. Among its publications in use in universities, colleges, and schools of the United States and in various other lands are *Seeing South America*; *Ports and Harbors of South America*; *Seeing the Latin Republics of North America*; and *Viajando Por Los Estados Unidos*. In addition to these, the Union publishes the *Bulletin*, in Spanish, Portuguese, and English. There are also booklets on Latin-American countries, their capitals, products, agriculture, educa-

tion, etc. Statistical matter compiled by the Union related to inter-American commerce, and included a booklet on each republic and a general survey of Latin-American trade for the year. The Union extended its services to women's clubs, and continued its policy of giving radio nights, introducing Latin-American music into the United States. The Pan American Sanitary Bureau, located in the Union Building at Washington, placed at the disposal of the republics of the continent the results of the sanitary progress of the year. It issues the *Pan American Sanitary Bulletin* monthly and distributes it throughout the Latin-American republics. The Director of the Pan American Union in 1928 was Dr. L. S. Rowe; Assistant Director, Dr. Esteban Gil Borges. The headquarters are in the Pan American Union Building, Washington, D. C.

PANKHURST, EMMELINE. English suffrage leader and outstanding figure in the fight for woman suffrage in England, died at London, England, June 14, at the age of sixty-nine. She was born at Manchester, England, and was educated at private schools in England and L'École Normale at Paris. In 1879 she was married to Dr. Richard Marsden Pankhurst (died 1898), who was devoted to work for social reform. In 1889 Mrs. Pankhurst, with her husband, helped to found the Women's Franchise League. Her connection with this and other societies, her work as a Manchester poor-law guardian (1874-98), as registrar of births (1898-1900), and as a member of the Manchester School Board gave her valuable practical political experience. In 1903 she founded the Women's Social and Political Union—an organization destined to achieve world-wide notice—as a resourceful, militant fighter for woman suffrage in the days before the War. The "burking" of the woman suffrage bills in Parliament up to 1912 roused it to activity. There followed a period of parades, speech-making, arson, destruction of mail in mailboxes with acids, etc., that was termed a "women's revolution." It held the attention of the entire world, and in everything Mrs. Pankhurst, who had an outwardly calm and demure demeanor save when aroused, was foremost. From Apr. 3, 1913, to Mar. 14, 1914, she was sentenced to jail, released and rearrested no fewer than twelve times. In all her suffrage activities she was assisted by her two daughters, the Misses Christabel and F. Sylvia Pankhurst. Mrs. Pankhurst invented the "hunger strike," since used by other prisoners. She lectured in America in 1909, 1910-11, and 1913 in behalf of the suffrage cause.

The World War and England's participation in it worked a radical change in Mrs. Pankhurst's activity. She and her followers suspended their activities as militant suffragists, organized the Women's Party, and helped in the mobilization of the woman power of Great Britain for winning the War. She traveled to Russia, Canada, and the United States in that cause. The winning of suffrage for women followed. In the last years of Mrs. Pankhurst's life she suffered from ill health which necessitated her residence for a time in Canada and Bermuda. She returned to England in 1925 and professed her support of Conservative principles. She thought of standing for Parliament, but declined the offer of Lady Astor to yield to her the seat for Plymouth held by the British-American peeress. She wrote many

pamphlets on woman suffrage and poor-law reform and an autobiography, *My Own Story* (1914).

PAN-PACIFIC INSTITUTE. The year 1928, although the interim period between the Honolulu Conference of the Institute in 1927 and the Conference planned for 1929 in Japan, was an active one both for the headquarters in Honolulu and for the constituent national councils. A large part of the time of the general secretary was devoted to negotiations with the national councils in China and Japan to secure representatives from both countries on the central staff in Honolulu. The research secretary spent several weeks in the Orient, surveying the research work of the national research committees. The result of this survey was embodied in a report which served as the basis for subsequent approaches to the foundations for assistance in carrying on international research work. The central staff in Honolulu publishes a news bulletin and a clip sheet, to keep the various national groups and their friends informed regularly of Institute activities in other parts of the world.

The American Council of the Institute functions in two relationships: as a unit of the Institute in the whole programme of research and conference preparation; and as an independent, but allied, body in its own programme of educational and research work. Through its educational committee it had been studying the leading colleges and universities in the United States, to discover to what extent Oriental history, literature, philosophy, politics, and art figure in their curricula. The American Research Committee was initiating a study of Pacific coast shipping, to be a part of a more comprehensive study which may be undertaken later by the International Research Committee.

The American Council established a Bay Region Committee of the Institute in San Francisco, which might serve as a model group for similar local units both in the United States and in other countries, to discuss local problems and stimulate interest locally in Pacific affairs generally.

The other national member councils in Canada, Great Britain, Australia, New Zealand, China, and Japan were active. Their work had been a result partly of the Conferences in 1925 and 1927 and their commitments therein, but their activities were mainly in the interest of establishing sound, permanent, national bodies, under the general administration of a sound, international secretariat, for a continuing programme of research and education in matters pertaining to the Pacific.

The Pan-Pacific Union (see *YEAR BOOK* 1927) is a separate organization under the government patronage of groups in the several Pacific countries with a secretary (Alexander Hume Ford) in Honolulu.

PAPER. The statistical report of the American Paper and Pulp Association, covering the year 1928, indicated increased production of both paper and wood pulp. The United States wood-pulp products for 1928 were estimated at 4,427,000 tons, compared with 4,313,403 tons valued at \$207,352,666 in 1927. The production of sulphate pulp increased in 1928, as it had in the previous year. Other products varied as indicated by the table in the next column.

Of the 219 establishments reporting the manufacture of wood pulp in 1927 to the U. S. Census of Manufactures (1928), 61 were situated in

New York, 33 in Wisconsin, 26 in Maine, 13 in Washington, 12 in Michigan, 12 in Pennsylvania, and the remaining 62 in 18 other States.

UNITED STATES WOOD-PULP PRODUCTION

	Tons of 2000 pounds	
	1928 ^a	1927
Mechanical	1,570,000	1,610,000
Soda	521,000	487,478
Sulphite	1,573,000	1,561,000
Sulphate	725,000	593,955
Total	4,427,000	4,313,403

^a Estimated.

The paper production in the United States also increased during 1928, being 10,250,000 tons, compared with 10,002,070 tons valued at \$872,206,847 in 1927. Newsprint again dropped in amount in 1928, as did felts, and building and cover papers, but wrapping paper showed a large increase. The accompanying table, also compiled by the American Paper and Pulp Association, gives comparative figures for the two years in the leading departments of paper production.

UNITED STATES PAPER PRODUCTION
[Tons of 2000 pounds]

	1928	1927
Newsprint	1,415,000	1,519,737
Book	1,409,000	1,323,782
Board	4,000,000	3,773,608
Wrapping	1,600,000	1,525,305
Fine	525,000	508,808
Tissue	325,000	316,070
Felts and building	570,000	625,589
Absorbent	64,000	63,766
Cover	25,000	26,333
All other	317,000	314,072
	10,250,000	10,002,070

Of 700 establishments reporting the manufacture of paper in 1927 to the U. S. Census of Manufactures (1928), 136 were situated in New

U. S. CENSUS OF MANUFACTURES, 1928
SUMMARY FOR PAPER AND PULP INDUSTRIES
OF THE UNITED STATES—1927

	Paper 709	Pulp 219
Number of establishments		
Wage earners (average for the year) ^a	98,566	24,794
Wages ^b	\$180,474,739	\$ 31,527,358
Cost of materials, mill supplies, fuel and purchased power, total ^b	\$527,785,538	\$151,325,425
Materials and supplies ...	\$512,935,626	\$134,231,864
Fuel and power	\$ 59,849,912	\$ 17,093,561
Products, total value ^b ..	\$919,891,565	\$218,198,201
Paper and paper board produced for sale ^c	\$807,696,857	
Pulp		\$207,332,666
Other products ^d	\$111,921,608	\$ 10,865,535
Value added by manufacture ^e	\$347,105,927	\$ 66,872,776
Horse power ^f	2,642,806	(^g)

^a Not including salaried employees.

^b The amount of manufacturers' profits cannot be calculated from the census figures, for the reason that no data are collected in regard to a number of items of expense, such as interest on investment, depreciation, taxes, insurance, and advertising.

^c Includes \$83,344,533, value of paper and paper board made for consumption in mills other than those in which produced.

^d Converted paper products, \$110,641,403; all other \$1,280,205.

^e Value of products less cost of materials, mill supplies, fuel, and purchased power.

^f Combined total for both industries.

^g Not reported separately; included under "Paper."

York, 80 in Massachusetts, 55 in Pennsylvania, 53 in Ohio, 51 in Wisconsin, 42 in Michigan, 37 in New Jersey, 32 in Connecticut, 30 in Illinois, 26 in Indiana, 25 in Maine, 24 in New Hampshire, 14 in Vermont, 12 in Washington, 11 in California, 10 in Maryland, and the remaining 71 in 19 other States. The table gives statistics as to the American paper and pulp industries.

Paper base stocks valued at \$112,295,501 were imported into the United States in 1928, compared with imports valued at \$113,632,216 in 1927. These imports included: pulpwood, classified as rough spruce, 460,919 cords valued at \$4,578,060; other rough, 54,159 cords valued at \$502,474; peeled spruce, 705,095 cords valued at \$7,748,574; other peeled, 273,087 cords valued at \$2,529,184; rossed spruce, 49,898 cords valued at \$742,392; other rossed, 3180 cords valued at \$56,611; wood and other pulp mechanically ground, 222,499 cords valued at \$5,443,495; sulphite wood pulp, 948,431 tons valued at \$55,955,555. The latter was of two kinds, bleached and unbleached, and was supplied principally by: Canada, 350,558 tons valued at \$22,805,358; Sweden, 333,367 tons valued at \$18,451,565; Finland, 94,278 tons valued at \$4,157,042; Germany, 63,525 tons valued at \$4,231,959; Norway, 63,668 tons valued at \$4,230,090. Sulphate wood pulp, unbleached (kraft pulp) valued at \$21,170,948, compared with a valuation of \$20,684,298 in 1927, came principally from Sweden which supplied 193,145 tons valued at \$10,136,956, and from Canada, which supplied 139,945 tons valued at \$8,718,108; imports of sulphate wood pulp, bleached, totaled 14,590 tons valued at \$894,587, compared with 10,789 tons valued at \$708,712 in 1927. The imports of rags for paper stock totaled 439,892,896 pounds valued at \$8,195,224, an increase from 1927, when the total value was \$7,646,864.

Paper and paper manufactures imported in 1928 were valued at \$156,384,548 as compared with \$149,365,343 in 1927. Of this amount, printing paper, standard newsprint, 4,313,732,865 pounds, valued at \$139,410,918, was the principal item. This can be compared with 3,974,129,203 pounds valued at \$131,488,784 in 1927. The largest supply came from Canada which contributed 3,552,695,242 pounds valued at \$126,151,545; Newfoundland and Labrador followed with 228,343,968 pounds valued at \$7,124,171, while Sweden ranked third with 111,438,867 pounds valued at \$2,949,230, and Finland fourth with 80,478,655 pounds valued at \$2,080,710. The second largest item of paper and manufactures included cigarette paper and cigarette books and covers which totaled 11,689,018 pounds valued at \$3,213,981, compared with 14,685,107 pounds valued at \$4,291,637 in 1927. Tissue and copying paper totaled 3,569,369 pounds valued at \$2,052,865, which represented an increase over 1927. Pulp boards in rolls, 54,315,525 pounds valued at \$1,185,858 were imported as well as paper boxes, 2,804,320 pounds valued at \$1,789,421.

The total exports of paper and manufactures from the United States in 1928 amounted in value to \$30,932,651, compared to \$26,945,746 in 1927. These exports included newsprint paper, 22,780,530 pounds valued at \$866,046 as against 24,657,313 pounds valued at \$1,191,033 for 1927; and book paper, not coated, 24,509,919 pounds valued at \$1,789,604. Other leading exports of paper and manufactures were: wrapping paper, 36,757,253 pounds valued at \$2,586,848; tissue

and crêpe paper, 4,995,465 pounds valued at \$1,096,324; box board, 48,669,581 pounds valued at \$1,353,561; paper board and strawboard other than bristols and bristol board, 42,124,168 pounds valued at \$2,149,565; wall board of paper or pulp, 61,539,772 pounds valued at \$2,068,788; boxes and cartons, 28,434,923 pounds valued at \$1,899,446; and vulcanized fibre sheets, strips, rods, and tubes, 5,523,712 pounds valued at \$1,455,175. See CHEMISTRY, INDUSTRIAL; AGRICULTURE; and CORN for manufacture of paper from cornstalks and other farm refuse.

PAPUA, pā'pū-ā. A territory of the Australian Commonwealth, comprising the southeastern part of the island of New Guinea and all the groups of small islands between 8° and 12° S. latitude and 141° and 155° E. longitude; formerly known as British New Guinea; transferred to the Australian Government Sept. 1, 1906. Area, 90,540 square miles, of which about 87,786 are on the Island of New Guinea. On June 30, 1927, the population was as follows: Europeans, 1366; Papuans (estimated), 275,000. Port Moresby is the capital and a port of entry. Other ports of entry are Samarai, Daru, and Kula-madua.

A large proportion of the natives are civilized, and many of them are taught in schools maintained by the four Christian missions in the territory. On Dec. 31, 1925, there were 62,981 acres of plantations. The chief crops are coconuts (50,506 acres), rubber (7728 acres), and sisal hemp (3560 acres). The forests contain valuable timber, and the mineral resources, which are considerable, include gold, copper, osmiridium, lead, zinc, tin, and iron. The only minerals exported have been gold, copper, and osmiridium. Indications of petroleum have been found over an area of 1000 square miles, and borings were being continued in 1928 under the auspices of the Australian Government. The chief imports are foodstuffs, tobacco, drapery, and hardware; the chief exports are copra, gold, hemp, pearls, and rubber. The exports in 1927 were valued at £454,462 and the imports at £455,904. There is a considerable trade between Australia and Papua, steamship communication being regularly maintained; 226,948 tons entered and cleared in 1927. The local revenue in 1927 was £111,508 and the expenditure, £167,728. The Australian Government grants an annual subsidy of £50,000. The territory is administered by a lieutenant-governor appointed by the Governor General of Australia, and an executive and a legislative council, both consisting of official or nominated members. Lieutenant-governor and chief judicial officer in 1928, Sir J. H. P. Murray.

PARAGUAY, pār'ā-gwā. An inland republic of South America; bounded on the west and south by Argentina, on the east by Argentina and Brazil, and on the north by Brazil and Bolivia. Capital, Asunción.

AREA AND POPULATION. The estimated area of Paraguay proper, which lies between the Paraguay and Alto Parana rivers, is estimated to be 61,647 square miles; in addition, Paraguay lays claim to a tract between the Paraguay and Pilcomayo rivers known as the Chaco; the ownership of this territory, however, is disputed by Bolivia. In the 1927 annual report of the Minister of Finance there was given what was claimed to be the first comprehensive census of population that had been compiled since 1886.

This was made by the Department of Agriculture and showed a total population for the country of 828,969.

Inasmuch as the total area of Paraguay was approximately 172,000 square miles, this would give a density of population in eastern Paraguay of about 12 inhabitants per square mile; in the Chaco of less than one-half, and in the entire country of about 5 per square mile. In Paraguay proper the people are of mixed blood; namely, Guarani, Indian, Spanish, and Negro, the first mentioned predominating. The largest cities with their populations, estimated in 1926, are Asunción, the capital, 113,684; Villa Rica, 26,000; Concepción, 11,000; Luque, 13,000, Carabegua, 12,000; and Encarnación, 7500.

EDUCATION. Education is free and nominally compulsory. During 1926 there were 90,133 pupils in government primary schools, 3201 in private schools, and 2083 in other schools, including 369 in the university. In the summer of 1928 it was stated that there were 100,023 pupils enrolled in public and private primary schools in 1927, a considerable increase over the enrollment of 1926. Dr. Justo P. Prieto was appointed president of the National University to fill the place left vacant by Dr. Eusebio Ayala, who was appointed a member of the Bolivian-Paraguayan Boundary Commission.

PRODUCTION. Most of Paraguay is neither mountainous nor swampy; its rainfall is sufficient for agricultural purposes and its climate, although subtropical, is agreeable and healthful. In addition, practically its entire area, amounting to 122,000 square miles, exclusive of the Chaco, which was in dispute between Paraguay and Bolivia, is tillable, although only a small portion of it had been brought under cultivation. There were in 1926 about 200,000 hectares under cultivation. Corn, oranges, and manioc covered the greater part of this area, and cotton, tobacco, yerba mate, the remainder. All these crops except cotton, tobacco, yerba mate, and oranges are grown almost exclusively for home consumption. Yerba mate is the chief forest product, which accounts for the relatively small acreage under cultivation. The production of cotton had increased from practically nothing 10 years ago to 2560 metric tons (ginned cotton) in 1927. Another industry for which Paraguay is especially fitted is stock raising. It was estimated that about 34.4 per cent of the entire area of the country was devoted principally to the raising of horses, cattle, sheep, and hogs. According to the livestock census of 1926, there were 3,270,000, cattle, 209,901 horses, 195,192 sheep, and 45,483 hogs. Most of the cattle available for the market are slaughtered and their carcasses either consumed at home or exported in the form of meat extract, preserved meats, and jerked beef. The business of converting these carcasses into articles for export is done by three meat-packing plants, which in 1926 slaughtered 115,767 cattle.

Paraguay is rich in forest products, nearly two-thirds of its area being covered with trees. These forests include a great variety of soft and hard woods which are suitable for general construction purposes, furniture and cabinet making, and naval construction, and which are annually exported in large quantities in the form of logs and sawn timber, mostly to Argentina and Uruguay. One of the important trees found in Paraguay is the quebracho, which is highly prized for its tannin content and is also used

for railway ties. In 1927 exports of quebracho extract amounted to 47,000 metric tons, or more than four times the quantity exported in 1913. Iron, manganese, copper, and other minerals are said to be abundant, but there is practically no mining. The principal manufacturing industries are meat-packing and the production of animal by-products, quebracho extract, beverages, shoes, and flour.

COMMERCE. Notwithstanding obstacles, economic progress in Paraguay has been steady, as is evidenced by the growth in exports, which amounted to 14,282,040 gold pesos in 1927, an increase of 8,723,233 pesos over 1914. Of these exports 40.6 per cent were forest products, largely quebracho extract and lumber; 35.3 per cent animal products, largely cattle hides, preserved meats, and meat extract; 23.2 per cent agricultural products, largely oranges, yerba mate, cotton, and tobacco; and the remainder mineral and other products. Over 80 per cent of these exports (about 85 per cent in 1927) go to Argentina, largely for reshipment to other countries, and the remainder principally to the United States, Germany, and Great Britain. United States purchases of Paraguayan products amounted to \$801,101 in 1927, an increase of \$14,124 over 1926. Paraguay's imports amounted to 11,977,766 gold pesos in 1927, an increase of 6,828,301 gold pesos over 1914. Of these imports 33.5 per cent were contributed by Argentina, 18.6 per cent by the United States, 10.9 per cent by Great Britain, and 9.6 per cent by Germany. Imports include a great variety of goods, of which the most important are textiles, hardware, wheat, chemicals, and ready-made clothing.

FINANCE. The figures in the following table submitted by the President in his annual message to Congress at its opening in April, 1928, are an evidence of the increased prosperity of Paraguay, the total receipts and expenditures of the past four years nearly equaling those of the eight years prior to 1924. Moreover, although the expenditures from 1924 to 1928 increased, there was a balance of more than 2,000,000 pesos, gold, which was used in part for extraordinary expenditures, while during the preceding eight years there was a deficit of 2,506,912.75 pesos. The totals of the various years were as follows:

<i>Year</i>	<i>Receipts Pesos, gold</i>	<i>Expenditures Pesos, gold</i>
1916	3,070,903.15	3,488,505.51
1917	2,940,758.39	2,263,441.07
1917-18	4,378,972.35	4,687,205.07
1919	5,121,341.57	6,022,486.53
1920	2,180,399.23	2,523,703.94
1920-21	3,665,887.34	3,517,101.36
1921-22	2,723,110.30	3,412,088.57
1922-23	2,868,209.43	3,541,967.46
Total	26,899,581.76	29,406,494.51
Deficit	2,506,912.75	.....
	29,406,494.51	29,406,494.51
1923-24	4,498,829.14	3,777,977.33
1924-25	5,516,173.81	4,169,068.49
1925-26	5,550,753.02	4,883,272.05
1926-27	5,186,243.62	5,146,461.18
Total	20,751,999.59	17,976,779.05
Extraordinary expenditures .....	.....	1,815,356.21
	20,751,999.59	19,792,135.26
Balance .....	.....	959,864.33
	20,751,999.59	20,751,999.59

The total national debt on July 31, 1928, was reported as 6,503,898 gold pesos and 27,267,179 paper pesos.

COMMUNICATIONS. Another great obstacle to the fuller economic development of the resources of the country is the lack of adequate means of transportation. There are few good roads, and although several rivers are navigable they constitute in general the boundaries of the country and, consequently, serve only the outlying sections. There is only one public railway, 274 miles long, and another small one, or about 2.3 miles of railway per 1000 square miles. A touring club of Paraguay had been established which sought to stimulate public interest in better roads, and many railway projects were being discussed. The most important of these was the one providing for a railway to connect Asunción with Bahia, Brazil. The construction of this railway will not only give Paraguay a second outlet to the Atlantic—the other being through Buenos Aires—and a shorter route to Europe and the United States but will also lay open to exploitation another large portion of the country which at present is practically non-productive.

GOVERNMENT. Executive power is vested in a president elected for four years, who acts through a ministry of five members; and legislative power in a congress of two houses; a senate of 20 members and a house of representatives of 40 members elected directly by the people. President in 1928, Dr. Eligio Ayala, who assumed office on Aug. 15, 1924. Dr. Ayala was succeeded by Dr. José P. Guggiari on Aug. 15, 1928.

HISTORY. Paraguay went through the throes of a presidential election during the course of the year. In the campaign for electors, the Liberal party gained a majority of the positions over the Republican party. José R. Guggiari was the candidate of the Liberals and Eduardo Felitas of the Republicans. Señor Guggiari campaigned on a platform of the peaceful settlement of the boundary dispute with Bolivia. For a discussion of this vexatious affair which nearly resulted in war toward the end of the year, consult the historical section of the article, BOLIVIA. Señor Guggiari was declared elected to the presidency when the legislature convened in May to count the electoral vote. The vice president was Dr. Emiliano Gonzalez-Navero. José P. Guggiari was born in Asunción on Mar. 17, 1884, and was educated to the law in his native country. After a highly successful career before the bar, he entered politics and served as a Liberal member of the legislature from 1912 to 1920, when he was appointed by President Gondra to the portfolio of Minister of the Interior. He served in this capacity for a period of two years and was again returned to the Chamber of Deputies for several more terms. He was president of the Chamber of Deputies when called to the position of chief magistrate of the country. During 1927 he was vice president of the Paraguayan commission to the international conference on the Paraguayan-Bolivian boundary question which met in Buenos Aires.

PARASITES. See ENTOMOLOGY, ECONOMIC.

PARIS, PAOT OF. See KELLOGG TREATIES.

PARK COLLEGE. A non-sectarian institution for the higher education of men and women at Parkville, Mo.; founded in 1875. The enrollment for 1928-29 totaled 501, distributed as follows: Seniors, 61; juniors, 73; sophomores,

161; freshmen, 197; and specials, 9. The faculty numbered 36, of which number, 1 associate professor and 5 instructors were added during the year. There were 36,000 volumes in the library. The endowment funds of the college amounted to \$1,660,000, from which the income was \$84,000. Tuition and fees amounted to \$91,000, donations, \$47,500 and other sources yielded \$9,500. A plan of honors work was adopted in 1927, to which 10 per cent of the senior class of 1927-28 were admitted, from the departments of biology, chemistry, education, English, modern foreign languages, physics, and sociology. President, Frederick W. Hawley, D.D., LL.D.

PARKS, NATIONAL. Lands maintained by the United States Government, under acts of Congress, for the preservation of their scenic or other unique features, and set apart for the use of tourists and visitors. During the 1928 season 2,522,188 persons visited the National parks, and 502,656 the National monuments, making a total of 3,024,844 visitors, an increase of 227,004, or 8 per cent, over 1927, previously the record year for travel. The accompanying tables from the report of the director of the National Park Service, by giving the number of visitors to each park and monument, indicate the trend of the tourists for the fiscal year 1928.

Name of park	1928
Hot Springs	199,099 ^a
Yellowstone	280,984
Sequoia	98,035
Yosemite	460,619
General Grant	51,988
Mount Rainier	219,531
Crater Lake	113,323
Platt	280,638 ^a
Wind Cave	100,809
Sullys Hill	24,979
Mesa Verde	16,760
Glacier	53,454
Rocky Mountain	235,057 ^a
Hawaii	78,414
Lassen Volcanic	26,057
Mount McKinley	802 ^b
Grand Canyon	167,226
Lafayette	134,897
Zion	30,016
Total	2,522,188

^a Estimated.

^b Actual park visitors; many miners and prospectors passed through park.

Name of Monument	1928
Aztec Ruins (New Mexico)	13,359
Capulin Mountain (New Mexico)	17,600 ^a
Carlsbad Cave (New Mexico)	46,335
Casa Grande (Arizona)	28,274
Chaco Canyon (New Mexico)	1,425
Colorado (Colorado)	13,000 ^a
Craters of the Moon (Idaho)	7,768
Devils Tower (Wyoming)	18,000 ^a
El Morro (New Mexico)	5,856
Gran Quivira (New Mexico)	2,779
Hovenweep (Utah-Colorado)	240
Katmai (Alaska)	.....
Montezuma Castle (Arizona)	16,232
Muir Woods (California)	103,571
Natural Bridges (Utah)	175
Navajo (Arizona)	315
Papago Saguaro (Arizona)	66,450
Petrified Forest (Arizona)	75,225
Pinnacles (California)	13,216
Pipe Spring (Arizona)	17,321
Rainbow Bridge (Utah)	1,200 ^a
Scotts Bluff (Nebraska)	137,500 ^a
Shoshone Cavern (Wyoming)	1,300 ^a
Sitka (Alaska)	13,000 ^a
Tumacacori (Arizona)	17,341 ^a
Verendrye (North Dakota)	115,000 ^a
Wupatki (Arizona)	1,500 ^a
Yucca House (Colorado)	174
Total	502,656

^a Estimated.

During the fiscal year of 1928 appropriations were \$4,889,685 and revenue was \$808,255.81, which was an increase of \$104,406.21 over the 1927 receipts. Various gifts totaled \$32,697.57. In an effort to modernize the roads and trails of the parks, Congress approved of an ultimate expenditure of \$60,000,000, or \$5,000,000 annually, instead of the usual \$2,500,000.

During the year the total area of the 20 parks became 11,846 square miles, due to the addition on September 15 of Bryce Canyon's 22 square miles, formerly in the National monument system, as authorized by Acts of Congress of June 7, 1924, and Feb. 25, 1928, and to the further addition through boundary adjustments of 6 square miles to the Hawaii National Park, 80 acres to Lassen Volcanic Park, 48 acres to the Grand Canyon, and about 340 acres to Yosemite National Park. The area of the National monuments was increased to 3,723.7 square miles by the addition of 880 acres to the Chaco Canyon, about 6 acres to the Aztec Ruins, and 26,240 acres to the Craters of the Moon.

It was proposed further to add to the system by the transference to the Department of the Interior of 10 parks and 9 monuments under the War Department, to be known as "National Historical Parks," and by the addition of the new eastern projects, Shenandoah and the Great Smoky Mountains National parks. Toward the purchase of land for the latter, the Laura Spelman Rockefeller Memorial offered to match all gifts up to \$5,000,000, so that estimates and purchases already had begun and it was hoped that the park would be opened in a few years. The Legislature of Virginia appropriated \$1,000,000 toward the former project, friends outside the State \$550,000, and the area required to make the region a park was reduced by legislation from 385,000 plus acres to 327,000. Earlier, the people of Virginia subscribed \$1,200,000 for the establishment of this park. On April 25 Congress accepted jurisdiction over Mesa Verde National Park, as offered by the State of Colorado.

During the year the forests were well protected from insect ravages, and in spite of a very dry season little damage was done by fire. Conditions were favorable for wild animal life, and the waters of the parks were again planted with fish. During the winter season, travel was greater than ever before, and it was hoped to encourage this movement by securing for Yosemite National Park the winter sports of the Olympic Games of 1932, which are to be held in Los Angeles.

The Laura Spelman Rockefeller Memorial gave \$10,000 so that educators might report on the educational possibilities of the parks. The Memorial also granted \$118,000 for the building of museums in the Yellowstone Park. The construction of a museum and auditorium was started near Old Faithful, and others were planned. A committee, appointed by the American Library Association, was to establish libraries in the parks. An observation station and trail-side museum at Yavapai Point in the Grand Canyon were dedicated on July 19. Archaeological work was done in the Mesa Verde National Park and at the Aztec Ruins and Gran Quivira National monuments.

In the Yellowstone National Park a new geyser of about 90 by 140 feet, with 4- to 6-hour eruptions 80 to 100 feet in height, occurring every

10 to 14½ hours, broke out in the lower basin.

The Tenth National Park Conference was held in San Francisco from February 15 to 21. Among the many problems discussed, the most important were those of an engineering, educational, personnel, or sanitational nature. A definite policy in regard to airplane travel to and from and in the parks was considered necessary in order to regulate this traffic. A conference including National Park officials, interested railroad and transportation officials, and others, was to be called during the winter of 1929 to formulate such a policy.

PATENTS. See UNITED STATES, under *Patents*.

PATTEN, JAMES A. American grain commission merchant and financier, died at Evanston, Ill., December 8. He was born at Freeland Corners, Ill., May 8, 1852, and attended country schools. After being a clerk in a store, 1869-71, he worked on his grandfather's farm, 1871-74. Moving to Chicago, he studied the grain business, while working as a State grain inspector, 1874-78. He then joined a brokerage firm, and with his brother, in 1880, established a grain commission firm. Successful in this undertaking, Mr. Patten joined the firm of Bartlett, Frazier & Carrington in 1903, partially retiring in 1910. Mr. Patten was in the public eye in 1909 when he was accused of cornering the market by securing control of 23,000,000 bushels of wheat. He denied that he won his fortune through grain manipulations; he speculated daringly, however, and made and lost large sums, particularly in his operations in competition with the Armour's. After the Sherman Anti-trust Act was passed, July 2, 1890, he was twice indicted, and once convicted for acting in restraint of trade. Mr. Patten was Republican mayor of Evanston, 1901-05. At the time of his death he was a director of several concerns, including the Continental & Commercial National Bank, the Commonwealth Edison Company, the Chicago Title & Trust Company, and the Chicago, Rock Island & Pacific Railway Company.

PAVEMENTS. See ROADS AND PAVEMENTS.

PEABODY MUSEUM. See ANTHROPOLOGY.

PEABODY MUSEUM OF AMERICAN ARCHAEOLOGY AND ETHNOLOGY. See ANTHROPOLOGY.

PEACE AND PEACE MOVEMENTS, THE BURTON RESOLUTION. This resolution referred to in the YEAR BOOK for 1927 and introduced by Representative Burton in the United States Congress December, 1926, declared it to be the policy of the United States to prohibit the exportation of arms, munitions, or implements of war to any country which engages in aggressive warfare against any other country in violation of a treaty, convention, or other agreement to resort to arbitration or other peaceful means for the settlement of international controversies. It was unanimously reported favorably and was to be considered at the session in 1929, when it was probable that it would be elaborately discussed.

Despite the unanimous vote in its favor by the Foreign Affairs Committee, the resolution aroused vigorous opposition from Secretary of War Davis, Secretary of the Navy Wilbur, and representatives of the American Legion and the Chemical Foundation. Passage of the resolution would seriously impair National defense plans, according to Secretary Davis, by limiting the

production of private munitions factories on which the Army depends for much of its war material. Secretary Wilbur, testifying March 17, declared that the output of American munitions plants would be lessened by their inability to fill orders from foreign countries in time of war, and that in time of peace these countries would be inclined to place their orders abroad. Charles H. Hertz, technical adviser of the Chemical Foundation, told the committee that the development of the American chemical industry which is competing with foreign countries, would be "seriously retarded" by the passage of the Burton Resolution. When cross-questioned by members of the Foreign Affairs Committee, Mr. Hertz admitted that American chemical companies could begin to turn out large supplies of chemicals and other munitions "within a week or ten days" if the Government needed them in time of war. It was pointed out by the committee that this statement was proof that the resolution would not interfere with the National defense programme. Committee members took exception to many of the statements made by Secretary Wilbur, indicating that the resolution was likely to be again approved, despite the opposition.

CAPPER AND OTHER RESOLUTIONS. There were several resolutions before the Senate Committee on Foreign Relations on the subject of World Peace, including Senator Capper's resolution (see YEAR BOOK for 1927) relating to the renunciation of war, and Senator Borah's, relating to the outlawry of war. No action was taken on any one of them and possibly the Kellogg treaties (q.v.) would be regarded as satisfactory substitutes.

INTERNATIONAL PEACE BUREAU. The Twenty-sixth Annual Peace Congress of the bureau was held at Warsaw, Poland, June 25, 1928. There were twenty countries and international associations represented at the congress, with 170 delegates in attendance. Germany had the largest national delegation, some 90 delegates having sent in an application. There was an Australian representative in the person of Mrs. E. C. Smythe, who was engaged on peace work in Vienna. There were three commissions which handled the main subjects of the congress: Actualities, Disarmament, and the Economic Organization of Peace.

Diplomatic and official representatives of many countries were in attendance at the inaugural session held in the Town Hall on June 25. It was significant that the warmest ovation of the morning was accorded to Dr. Quidde, of Germany, the Nobel Prize winner of 1928, at the point when he declared that just as he and his friends had struggled for the freedom of the Poles under the old Germany, so they now stood for the policy that under no circumstances would Germany and Poland ever go to war. Buisson, the joint Nobel Prize winner, was in the audience. He was brought to the platform on Dr. Quidde's suggestion, and also contributed to the speeches. See NOBEL PRIZES.

Three resolutions stood out from the rest. They occupied most attention of the commissions and evoked the deepest interest in the sessions of the congress, before being adopted. One dealt with economic organization and was introduced by M. Delaisi, of France. The other dealt with the situation in respect of disarmament. The third welcomed the Kellogg proposal. The Delaisi resolution stressed the dangers of economic nationalism and urged the development of the pur-

chasing power of agricultural countries as the sound line of immediate development. These are the pertinent sentences:

With reference to economic relations between European nations, the congress is of opinion that the balance cannot be attained except by the development of the purchasing power of agricultural countries, by means of international credits so as to solve simultaneously the unemployment crisis in industrial countries and the agrarian crisis in agricultural countries.

For this reason the congress suggests that the League of Nations should place upon the agenda of the next economic conference the question of the organization of credit in the agricultural European countries, and meanwhile it urges the development of the League bodies responsible for the study of economic and financial questions.

Two other economic resolutions welcomed the work of the International Economic Conference and suggested further extensions of this work:

1. The International Peace Congress welcomes the efforts of the International Economic Conference tending to reduce the artificial economic obstacles and notes that such efforts correspond in a very large measure to the demands made by earlier Peace congresses, and demands the immediate carrying out of the Geneva Resolutions, in particular those which contemplate the reduction of customs duties, free exchange of industrial and agricultural products, facilitation of transport, conclusion of long-term commercial treaties, based on the needs of all States and Nations and not serving only a few interested territories and circles. The International Peace Congress desires an enquiry into the equitable distribution of raw materials.

2. The International Peace Congress draws the attention of the League of Nations to the dangers of economic-political, and in particular of commercial-political, disputes, which under pressure of public opinion may seriously endanger peace.

3. The International Peace Congress expresses the desire that the League of Nations should, within three months of the outbreak of an international economic dispute, take the initiative in convening the parties to the dispute to negotiate direct, and apply all possible means to settle the dispute—impartial enquiries, summoning of experts, setting up of Conciliation Committee, as a last resort placing the matter before an impartial Arbitration Court.

Resolution 11 read as follows:

1. The International Peace Congress sees in the renewed increase of purely private-economic international cartels and trusts which extend to various countries no sure means tending to the economic organization of peace and advocates international control from the social-political and a world-economic point of view, such control to be under the auspices of the League of Nations.

2. The International Peace Congress consequently renews its request for the setting up of an international economic council on the lines of the International Labour Office of the League of Nations.

The disarmament resolution was mainly the work of M. le Foyer, the Secretary General of the French Federation of Peace Societies. It set out *seriatim* the failure to achieve agreement for general disarmament during the past year at Geneva and recalled the obligations of Article 8 of the Covenant and "calls for the convocation of the preparatory commission before the meeting of the 9th Assembly and the meeting of the World Disarmament Conference after the 9th Assembly and before the close of 1928."

In the event of the preparatory commission not being convened, or in the event of failure, the resolution called for a disarmament conference with responsible political representatives "competent to deliberate effectively, to take the initiative, and to make decisions."

The resolution closed by warning the governments of their solemn responsibilities with regard to disarmament and appealed to the peoples "to hasten to insure their common defense by the organization of disarmament."

A resolution described the American (Kellogg) proposal as an event of the greatest significance and called upon all the powers to secure its general adoption without reservation.

A further disarmament resolution dealt with the private manufacture of arms and recalled the fact that the International Peace Movement had always recognized the dangers resulting from the manufacture of armaments. On various occasions resolutions had been adopted in order to circumvent this great danger, the last previous occasion being that of the meeting of the General Assembly in Paris, 1927. Unfortunately, the League of Nations had only drawn very insufficient conclusions from the "grave objections" to the private manufacture of armaments. The League, it was declared, should at least publish within the near future the definite and full statistics concerning private and State production and private and State traffic in war materials which had so frequently been asked for: it should further give definite information concerning the export of war materials. This did not affect the fundamental demand of the Peace Movement for prohibition of the export of war material.

An omnibus resolution dealing with China was passed at the instance of the Actualities Committee, also another appealing to the German Government for the pardon of two German Pacifists, Kuster and Salomon, who had been condemned for alleged illegal activities; a third urged "the speedy conclusion of an equitable commercial treaty between Germany and Poland to serve as a basis for normal and lasting economic relations between the two countries."

In the course of the council meeting at the Warsaw Peace Congress, the question of the possibility of strengthening the bureau through the appointment of a director and a larger staff was discussed, the bureau having been without a director since 1914. To that end a committee was appointed to raise the necessary funds.

UNIVERSAL RELIGIOUS PEACE CONFERENCE. A preliminary Conference was held in Geneva, September 12, 13, 14. Dean Shailer Mathews was chairman of the conference committee, and Dr. Henry A. Atkinson, general secretary. One hundred delegates representing all the living historic faiths were present. The committee voted without dissenting voice to hold a full conference in 1930. A committee of one thousand was to be formed to "read a new meaning into the declaration that war is an outlaw." This Committee was to be composed as follows: Christians 250 (of which the Protestant and Roman Catholics were to have 100 members each and the Eastern Church, 50); Confucianists, 75; Buddhists, 150; Hindus, 100; Jains, 25; Jews, 60; Moslems, 125; Parsees, 25; Shintoists, 50; Sikhs, 25; Taoists, 25; Miscellaneous, 90.

Among the delegates to the Conference were Dr. Henry A. Atkinson, of New York, General Secretary of the Church Peace Union; Dr. William P. Merrill, of New York; Dr. S. Parkes Cadman, of New York; Dr. Frank Oliver Hall, of Tufts College; Dr. F. Nansen, of Norway; Henry Wickham Steed, of London; Dr. Hertz, Grand Rabbi of the British Empire; Dr. Reinach; Dr. Chen, of Peking, President of the Confucianists of the World; and the Maharajah of Burdwan. Dean Shailer Mathews, of the University of Chicago, was appointed chairman of the World Committee. The final resolutions adopted were in effect that there should be no attempt to create a league of

religions, nor to formulate a "synthetic" type of worship. The sole purpose was to bring together the representatives of religions of the world to discuss this question: "What can religion contribute toward establishing world peace?"

THE CHURCHES AND WORLD PEACE. Three significant activities stand to the credit of the churches during the year 1928. The first was the *Anti-Big-Navy Campaign of January and February*. The churches were apparently shocked when they learned of the proposals of the U. S. Navy Department and that a vast navy building programme had been presented to Congress. Secretary of the Navy Wilbur stated to the House Committee that this five-year programme was the first step in a twenty-year programme which, as calculated, would cost \$2,500,000,000 for construction only. A campaign to inform the churches of this proposal was promptly projected. A hundred thousand churches and pastors were urged to present the information to their people, who in turn were urged to give the proposals careful study, and then to inform their representatives in Congress of their desires. These efforts, united with those of many groups and organizations and a vigorous discussion in the daily press, brought such a flood of letters, petitions, and telegrams that the House Committee on Naval Affairs reversed its votes and reduced the plan from 71 to 16 war vessels, to cost approximately \$240,000,000. Although the bill in this reduced form was adopted by the House of Representatives, the Senate did not regard it as of sufficient importance to deal with it before adjournment in May.

THE PEACE PACT OF PARIS. The churches recognized almost at once the possibilities of the proposal of M. Briand, in April, 1927, that the United States and France enter into a solemn covenant to renounce and outlaw war as an instrument of national policy in their mutual relations. In May the Federal Council of the Churches of Christ in America passed a resolution urging acceptance of the proposal, but making it known at the same time to other nations that the United States would be pleased and would hope to make similar treaties with them. Notwithstanding the apparent indifference of the Department of State to the proposal, in November (1927) a delegation of outstanding church leaders waited on the President and the Secretary of State, urging the importance of M. Briand's proposal. The Government began to exhibit interest in it. During the winter, spring, and summer, the Churches followed with their prayers the progress of the negotiations and many resolutions were adopted at national and local church gatherings. In support of the movement and to help insure ratification of the Pact, the emphasis of the Federal council's programme for the services on the tenth anniversary of the Armistice was placed on the Peace Pact.

THE TWENTY-SECOND NATIONAL PEACE CONGRESS (Rennie Smith, Secretary, 29 Victoria Street, London, S. W. I.). This meeting was held in Caxton Hall, London, July 6 and 7, and was devoted to a discussion of Anglo-American relations. Among the speakers were Lord Henry Cavendish-Bentinck; Dr. G. P. Gooch; Gilbert Murray; Lieutenant-Commander Kenworthy; Philip Kerr; Lord Thomson. The American speakers were Emily Green Balch, and Prof. William I. Hull. The topics discussed were the Kellogg proposals

for the renunciation of war; the freedom of the seas and the Naval situation; the "Outlawry" movement, the economic relations of Great Britain and the United States.

Among the organizations affiliated with this Congress are the National Free Church Council, the Coöperative Union, Ltd., the Women's Coöperative Guild, the Cobden Club, the Friends' Peace Committee, the National Association of Schoolmasters, Theosophical Order of Service, Fellowship of Reconciliation, Boys' Life Brigade, British Federation of Youth, Vegetarian Society, World Peace Union, Christian Spiritualist Churches, the National Brotherhood Council, the Women's International League, the Iron and Steel Trades Confederation, the No-More-War Movement, the Church of England Peace League, the Peace Society, Holiday Fellowship, Ltd., Girls' Life Brigade, Arbitrate-First Bureau, Union of Democratic Control, the Union of Post-Office Workers, and Workers' Travel Association. The Council is a comprehensive body without political or religious bias and is designed to coördinate the English work for peace.

INTERNATIONAL GOOD-WILL CONGRESS. A meeting was held in New York, November 11, 12, and 13, celebrating the tenth anniversary of the signing of the Armistice. It was held under the auspices of the World Alliance for International Friendship through the Churches. Among the speakers were: the Honorables William E. Borah, Theodore E. Burton, and William E. Dever; Jane Addams; William Green; Pres. Robert R. Moton; Bishop William P. McDowell; the Reverends Harry Emerson Fosdick, Joseph Fort Newton, Reinhold Niebuhr, and John A. Ryan; Chester H. Rowell; Rabbi Stephen S. Wise; and William Allen White.

NATIONAL COMMITTEE ON THE CAUSES AND CURE OF WAR. Its third conference was held in Washington, January 15-19. As at the two previous conferences, Mrs. Carrie Chapman Catt, general chairman, presided. The organizations represented were: American Association of University Women; Council of Women for Home Missions; Federation of Women's Boards of Foreign Missions of North America; General Federation of Women's Clubs; National Council of Jewish Women; National League of Women Voters; National Women's Trade Union League; National Board of the Young Women's Christian Associations. Recommendations were made to these organizations that they give active and concerted support to the efforts of the Department of State for the conclusion of either a multilateral treaty or bilateral treaties, based on the principles of the renunciation of war as an instrument of National policy and for the use of existing, and the creation of needed, machinery for the peaceful settlement of international disputes.

Recognizing the fact that women of other countries also were deeply concerned in building for world peace, resolutions were passed to communicate with leading women's groups in other nations, inviting their coöperation in international efforts to use the massed efforts of the woman power of the world for the creation of peace sentiment. The conference authorized addressing the President expressing hope that a way might be found to reopen negotiations looking toward adherence of the United States to the Permanent Court of International Justice.

CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE. Soon after the Endowment was organized

in 1910, foundations were laid for a library, adequate to its needs, to be maintained not only for the use of the officers of the Endowment but to supply information to the public on the subjects in which the Endowment was interested. The principal objects of the Endowment are the advancement of the cause of peace and the increase of knowledge and understanding among nations, the abolition of war, the peaceful settlement of international disputes, the study of the causes and effects of war, the development of international law, the education of public opinion regarding war and its prevention, and the maintenance of organizations deemed useful in accomplishing these purposes.

Three divisions of the Endowment were organized, each with a director in charge; the Division of Intercourse and Education, the Division of Economics and History, and the Division of International Law. The first two divisions were located in New York City, under the direction of Dr. Nicholas Murray Butler and Dr. John Bates Clark, respectively. Dr. Clark retired and was succeeded by Dr. James T. Shotwell. The Division of International Law, the library, and the headquarters of the Endowment are located at No. 2 Jackson Place, Washington, D. C., under the direction of Dr. James Brown Scott, secretary of the Endowment.

The major portion of the library collection of 40,000 volumes consists of treatises on international law and relations, international arbitration and the peace movement, history, diplomacy, law, standard reference books, periodicals, newspapers, and serials. The interests of the Endowment being world-wide, the library is necessarily broad in its scope; and books on economics, political, military, and naval sciences occupy a large portion of the shelves, as well as works on education, literature, biography, and bibliography. All of these resources are available for reference by the interested public, and books which can be spared are loaned to government officials, libraries, students, and research workers.

The library has been called the reservoir which supplies most of the information requested of the Secretary's Office. From the *Chronicle of International Events*, kept daily by the librarian, many questions dealing with events of any importance in international affairs, past, present, and forthcoming, may be immediately answered without further research. When inquiries indicate that widespread interest is being taken on some international problem, a reading list on that subject is compiled and mimeographed for free distribution to libraries on the mailing list and for use in answering inquiries. Twenty-five such lists were available at the end of the year on subjects of special interest.

The library of the European Bureau of the Carnegie Endowment in Paris was formed in 1914 under the name of Frederic Passy Library, as the books then composing it came from the library of M. Passy. This nucleus was enlarged by numerous works on history, international law, political economy, and international concord and forms a unique source of documentation of international law, much used by students from many countries studying in Paris.

Nearly nine hundred libraries in the United States and foreign countries were depositories for all the Carnegie Endowment publications, numbering nearly five hundred, and a select list of libraries receive regularly the publications

of the Division of Economics of History, including the series of studies known as the *Economic and Social History of the World War* to be completed in about one hundred and fifty volumes. The International Conciliation pamphlets being published by the Division of Intercourse and Education, as well as many of the monographs listed in the Endowment's YEAR BOOK, were being distributed free to libraries.

Collections of about two thousand volumes on American history, literature, science, and culture had been presented to several important foreign libraries in the hope that the books would be fruitful in spreading accurate knowledge of American life and in promoting the growth of international friendship. Additional books were being sent to these libraries from time to time and smaller collections on public law had been presented to universities in Germany, Austria, Hungary, Poland, and the other European countries through the agency of the books for Foreign Countries Committee of the American Library Association.

The Division of Intercourse and Education some years ago established a custom of "placing in public libraries in smaller towns of the United States, books that should help to acquaint the general reader with what other people in other lands are thinking, how they are living, and how they are governed." Such collections, called "International Mind Alcoves," had been selected and distributed to one hundred and seventy-eight libraries. Books on international affairs also were provided for the use of international relations clubs in colleges and universities, together with a *Fortnightly Summary of International Events*.

THE AMERICAN PEACE SOCIETY. This organization celebrated the One hundredth Anniversary of its founding in 1828 by holding a World Conference on International Justice at Cleveland, Ohio, May 7, 8, 9, 10, and 11. The programme arranged by Dr. James Brown Scott consisted of two parts—one the general assemblies with a series of addresses; the other a series of six study commissions which met and subsequently reported upon six key problems of international life. May 6 was Peace Sunday; May 7, Ohio Day; May 8, American Peace Society Day; May 9, Neighbors' Day; May 10, World Day; and May 11, Report Day.

The first commission dealt with the International Implications of Industry, John M. Parker, former Governor of Louisiana, chairman; Dr. Harold G. Moulton, vice chairman; Whiting Williams, secretary. It studied and discussed major international activities of banks, trade organizations, chambers of commerce, labor and other groups, in their relations to a better international understanding and behavior. The second commission on the International Implications of Justice, Prof. Philip Marshall Brown, chairman, dealt with the contributions of international law to the problems of international peace. The third commission on Methods of Organization for the Promotion of International Peace, Pres. Ernest H. Wilkins, of Oberlin College, chairman, was open to peace and patriotic groups in the interest of a better understanding between them and a more effective cooperation for their common ends. The fourth commission, on the International Implications of Education, John J. Tigert, United States Commissioner of Education, chairman, was composed of representatives

of schools and colleges. The fifth commission, on the International Implications of Religion, Bishop William Fraser McDowell (Methodist), chairman, the Rev. William W. Van Kirk, secretary, was open to the representatives of all creeds. The sixth commission, on the International Implications of Social Agencies, Dr. Edward T. Devine, chairman, considered the peace movement as a new and important phase of world effort.

The Commission on the International Implications of Justice reported the following prepared by its chairman, Professor Brown:

Believing that American political and social institutions have achieved results of universal significance, feeling that certain American principles of government and justice might profitably be applied to the relations of nations, the *Commission on International Justice* reminds the American Peace Society, on this its one-hundredth birthday, of the following principles for the achievement of international justice and peace:

1. All nations which have been formally recognized as members of the family of nations are entitled to equal rights and are subject to equal duties under international law.

2. International law finds its authority in the common consent of nations, as evidenced by usage, treaties, decisions of international commissions and tribunals, declarations of national executives, legislatures, and courts.

3. The interests of nations are defined, respected, and protected by mutual understandings and forbearance, and conflicting interests reconciled by processes of conciliation. They are not necessarily dependent upon coercion.

4. Disputes among nations are to be adjusted by peaceful methods which respect the equal rights and duties of States under international law.

5. When ordinary methods of diplomacy prove ineffective, recourse to commissions of inquiry, conciliation, and arbitration is recommended as the method most consonant with the orderly conduct of international relations. The purpose of commissions of inquiry is the dispassionate investigation of the facts giving rise to a dispute and a recommendation of the procedure deemed most suitable for the eventual settlement of the controversy. Pending such investigation and report, provision should be made for a *modus vivendi* to insure that the respective rights and interests of the parties to the dispute should suffer no serious injury.

Disputes generally recognized as nonjusticiable should be settled by recourse to good offices, mediation, commissions of inquiry, or to friendly composition. They may be referred, in case the parties agree, to special arbitral tribunals.

6. Disputes of a juridical nature should be submitted to special tribunals, to the Permanent Court of Arbitration, to the Permanent Court of International Justice, or to mixed commissions already established or created *ad hoc*.

Such tribunals, courts, and commissions should be empowered under special circumstances and conditions to decide upon the preliminary question whether or not a dispute is of a juridical nature. Such a decision should be rendered by a majority of at least three-fourths of the judges constituting the court before it may assume jurisdiction over the case.

The Permanent Court of International Justice may not properly be called upon to express an advisory opinion on questions of a political, nonjusticiable nature. The fifth reservation of the United States Senate to the statute of the Permanent Court of International Justice is approved as a means of safeguarding the purely judicial functions of the court.

The dignity and independence of the Permanent Court of International Justice should be protected by (a) the election of its judges in such a manner as to insure its continuous existence, and (b) by rendering its financial maintenance independent of special periodical appropriations by the League of Nations.

The Hon. Theodore E. Burton, of Ohio, was president of the conference; A. D. Call, the director; and Lacey Z. C. Zapf, the secretary. Senator Burton was succeeded as president of the society by William Fortune of Indianapolis.

In connection with its one-hundredth anniversary, the society recalled that the year 1928 marked other notable anniversaries. Sir William Randal Cramer, founder of the Interparliamentary Union, was born in Fareham, Hampshire,

England, Mar. 18, 1828. The desire of his life was to do something toward the ultimate abolition of war and he believed that the hope for such a thing lay in international arbitration. In 1871 he conceived a plan for a High Court of Nations which was adopted by the Council of the International Arbitration League, of which he was also the founder. Because of his work in organizing the Interparliamentary Union, he received the Nobel Peace Prize.

P. W. Wilson, writer for the *New York Times* announced that H. G. Wells was not the man who first had outlined history: that history outlining began in Ireland with Marianum Scolius, author of the *Chronicon Universale* which included everything from Creation to the date of this history. This Benedictine monk was born in 1028. Chaucer, father of English literature, was probably born in 1328; that Bunyan the author of *Pilgrim's Progress* was born in 1628; that Goldsmith, author of the *Deserted Village* and of *She Stoops to Conquer* was born in 1728; that George Meredith was born in 1828, and that Thomas Hardy died in 1928; that both Tolstoi, interpreter of the human spirit, and Nikolai Tchernyshevsky, founder of Nihilism, was born in 1828; and that Henrik Ibsen, Norwegian dramatic poet and moralist, was born at Skien, Mar. 20, 1828.

The American Peace Society received June 6, from the Vereenigin Voor Volkenbond en Vrede, with headquarters at The Hague, a gold medal known as the "Grotius-Médaille."

In commemoration of the anniversary, the American Legion adopted a preamble and series of resolutions to the effect that the American Legion was in accord with the purposes and policies of the American Peace Society, and that they were thoroughly in accordance with the declared principles of the American Legion; and that the Legion owed it to members and the public to take a definite and constructive stand upon all matters of importance pertaining to the promotion of international peace; therefore, the National Executive Committee of the Legion expressed the belief that on this basis the World Conference on International Justice sponsored by the American Peace Society had great potential promise of substantial and well-directed progress toward the promotion of peace and good will" as sought in accordance with the principles of the American Legion in a sane, conservative, and loyal advance toward an honorable, self-respecting international peace.

Pursuant to an Act of the State Legislature, passed Mar. 15, 1927, the State of Maine celebrated at Center Minot, Maine, July 21, 1928, the one hundred and fiftieth anniversary of the birth of William Ladd and the one hundredth anniversary of the foundation of the American Peace Society. In the presence of a large gathering of men and women, the Governor of the State unveiled a huge boulder monument. The ceremony throughout was a fitting tribute not only to William Ladd but to the spirit of Maine. The monument was built beside the open road along which William Ladd most frequently traveled.

THE WORLD PEACE FOUNDATION. Edwin Ginn, its founder, while widely known to his contemporaries as a successful publisher of school textbooks, deserves a larger fame. At a time when it was the fashion to speak wholly sentimentally, if at all, concerning peace, he achieved a concept of peace which has come to most people only as one of the drastic lessons of the

World War. To him, peace meant more than a lull in open hostility; more, even, than renunciation of war; it meant the affirmative type of international relations toward which so many nations turn today for economic as well as military security. Prerequisite to such measures, he foresaw, was a widespread general understanding of the rest of the world and its affairs. Accordingly, Mr. Ginn launched in his home city, Boston, out of his private fortune, the World Peace Foundation. It since has been engaged, not in adding to the vast and argumentative literature of propaganda, but in making available for American readers reliable fact material on international relations and international coöperation. Toward this end it has secured the American agency for the entire documentation of the League of Nations, the International Labor Office, and the Permanent Court of International Justice. It maintains at Boston not only a complete stock of these publications for sale to librarians and specialists but also one of the outstanding libraries on international relations in the United States, and a reference service which is conducted without charge.

The Foundation is a publisher as well. Its *Yearbook of the League of Nations* is an analysis in English of each year's work of the League. Its study of the World Court by Manley O. Hudson, of Harvard Law School, was the only case-by-case summary of the work of the Permanent Court to the beginning of 1928. It had on the press in 1928 a book on the work of the International Labor Organization which was to present in one volume the complete story of this monumental programme for the industrial peace of the world which Samuel Gompers declared must precede a lasting peace between nations.

PEACHES. See HORTICULTURE; BOTANY, under *Plant Diseases*.

PEACH MOTH. See ENTOMOLOGY, ECONOMIC.

PEARS. See HORTICULTURE.

PEARSON, EDWARD JONES. American engineer and president of the New York, New Haven & Hartford Railroad Company, died at Baltimore, Md., December 7. He was born at Rockville, Ind., Oct. 4, 1863, and was graduated in civil engineering from Cornell University in 1883. After working in the engineering department of the Missouri Pacific Railway in 1881, he was engaged on railway construction in the Indian Territory and Texas in 1882, and on terminal development at Portland, Ore., 1883-84. He was then made supervisor of the St. Paul and Minnesota division of the Northern Pacific Railway, and put in charge of construction train service until 1890, when he became division engineer of lines east of Livingston. In addition to being made, in 1892, principal assistant engineer of the Chicago Terminals, which the Northern Pacific had leased, Mr. Pearson received similar positions with the Chicago & Calumet Transfer Company, and the Winconsin Central Railway. Employed in 1894 as superintendent of the Yellowstone, Rocky Mountain, and Pacific divisions, and as assistant general superintendent in charge of transportation, he subsequently became chief engineer of the Northern Pacific. The Chicago, Milwaukee & St. Paul Railway also employed him as chief engineer, on the Pacific extension, 1905-11. He later served as first vice president of the Missouri Pacific-Iron Mountain Railway, from June 1, 1911 until Mar. 26, 1915, and of the Texas & Pacific Railway Company,

1915-16. Mr. Pearson accepted the vice presidency of the New York, New Haven & Hartford Railroad in 1916, becoming president, May 1, 1917; when the Government undertook the direction of the road, he was appointed Federal Manager, June 10, 1918. Made president again in February, 1920, when the railroad was returned to private ownership, Mr. Pearson remained with the company and was successful in placing the property on a paying basis with a highly efficient standard of operation. At the time of his death, he had presented a resignation which would have taken effect on Dec. 31, 1928.

PEELLE, päl, STANTON JUDKINS. United States judge, died September 4, at Washington, D. C. He was born in Wayne County, Ind., Feb. 11, 1843. After serving in the Civil War from 1861 until 1865, with a regiment of Indiana Volunteers, he was admitted to the bar in 1866, and practiced at Winchester, Ind., for two years. He then moved to Indianapolis where he practiced until 1892, being a member of the Indiana House of Representatives from 1877 until 1879, and of the United States House of Representatives in the Forty-seventh Congress from 1881 until 1883. He was an alternate delegate-at-large to the Republican National conventions in 1888 and 1892. He was appointed judge of the United States Court of Claims by President Harrison in 1892, and presided in that court as chief justice from 1906 until his retirement in 1913. Judge Peelle was a professor of the law of partnership and bailment at George Washington University from 1901 until 1911. He was president of the board of trustees of Washington College of Law, the Presbyterian Home for the Aged, and the Garfield Hospital from 1910 until 1924. He was a commander of the Military Order of the Loyal Legion of the District of Columbia from 1916 until 1917. He received the LL.D. degree from Valparaiso University in Indiana and the same degree from Howard University in Washington.

PELHAM-CLINTON, HENRY PELHAM ARCHIBALD DOUGLAS. See NEWCASTLE, DUKE OF.

PELLA'GRA. BLACK TONGUE IN DOGS. In the June 8 number of the *Public Health Reports* of the U. S. Public Health Service there is an exhaustive article on the disease known as "black tongue" in dogs and its possible identity with human pellagra. A research was undertaken to discover experimentally in animals an analogue of human pellagra and this had been in progress for over two years. The dog was chosen because the spontaneous disease, black tongue, bears some resemblance to human pellagra. Attempts were made to produce it by feeding sound animals on the diets known to favor the development of the disease in mankind, and animals with black tongue with the food substances which antagonize the disease in the human subject. The research which was being conducted by Drs. Goldberger, Wheeler, Lillie, and Rogers, of the Public Health Service, was still in progress at the end of 1928, no final decisive report being possible at that time. On a diet of maize meal, which favors the appearance of the disease in man, six out of seven dogs developed black tongue in from 12 to 142 days, showing the great significance of the individual equation. The assumption is not that maize is a pathogenic food substance per se but simply does not contain the vitamin-like body which is able to prevent the disease. Black tongue may be prevented to a greater or

less extent by the use of such foods as wheat germ, beef muscle, pork liver, etc.

PENANG, pē-nāng'. One of the Straits Settlements. See STRAITS SETTLEMENTS.

PENNSYLVANIA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 8,720,017. The estimated population on July 1, 1928, was 9,854,000. The capital is Harrisburg.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Hay	1928	2,939,000	4,667,000 ^a	\$58,286,000
	1927	3,090,000	5,085,000 ^a	68,592,000
Corn	1928	1,283,000	50,037,000	46,534,000
	1927	1,270,000	50,165,000	45,650,000
Potatoes	1928	246,000	31,980,000	20,787,000
	1927	220,000	26,400,000	31,680,000
Wheat	1928	1,108,000	17,171,000	22,148,000
	1927	1,098,000	20,301,000	25,787,000
Oats	1928	1,067,000	34,678,000	18,379,000
	1927	1,100,000	39,600,000	21,384,000
Apples	1928	.....	8,460,000	9,729,000
	1927	.....	6,300,000	8,820,000
Tobacco	1928	37,000	49,580,000 ^b	6,941,000
	1927	34,000	46,240,000 ^b	6,011,000
Buckwheat	1928	195,000	3,802,000	3,384,000
	1927	210,000	4,985,000	4,195,000
Rye	1928	103,000	1,596,000	1,708,000
	1927	86,000	1,462,000	1,535,000

^a tons, ^b pounds.

MINERAL PRODUCTION. The State produced nearly \$500,000,000 more of minerals in 1926 than any other in the Union, and furnished 19.18 per cent of the entire mineral production of the country, reckoned by value. It was as usual the sole producer of anthracite and the leader in output of bituminous coal, coke, cement, pig iron, ferro-alloys, and stone. The coal industry, the most important of the mineral group in this State, was depressed in 1927, on account of labor troubles affecting the bituminous output, and of slack demand, affecting anthracite. In 1927, 71,513,986 tons of anthracite were mined; in 1926, 75,390,582. The value of anthracite mined was \$420,942,000 for 1927; \$474,164,000 for 1926. The quantity of bituminous coal produced in 1927 was 133,141,639 net tons; in 1926, 153,041,638. The value of the bituminous product was \$273,144,000 for 1927; \$325,618,000 for 1926. The 153,829 workers in the bituminous mines averaged 203 days of employment in 1927. Coke production was increasingly in by-product ovens. The by-product coke output of 1927 was 11,329,000 short tons; that of 1926, 11,200,624 tons, valued at \$48,722,935. The beehive coke output for 1927, fell to 5,477,000 short tons (including the relatively small Ohio production) from 10,722,352 for 1926, valued at \$47,595,184.

The iron ore shipped from Pennsylvania mines in 1927 was but 1,124,883 long tons, and in 1926, 1,088,634; in value, \$2,559,916 for 1927 and \$2,483,056 for 1926. It supplied but a small part of the blast furnaces of the State. These produced 11,145,334 long tons of pig iron in 1927, as compared with 13,142,528 in 1926. The value of pig iron produced in 1927 was \$212,179,275 and in 1926, \$263,238,184. The cement industry showed an increase in production, to 43,732,278 barrels for 1927, from 42,865,694 for 1926; cement shipments were \$66,711,069 in value for 1927 and \$70,437,218 for 1926. Clay products were valued at \$55,041,270 for 1926, the latest year recorded, and at \$54,369,402 for 1925. The natural-gas output increased to 107,089,000 M

cubic feet for 1926, from 101,632,000 M for 1925; it was \$50,040,000 in value in 1926; \$47,089,000 in 1925. The petroleum wells of the State yielded 9,596,000 barrels in 1927 as against 8,961,000 in 1926, but the value of the 1927 product was less, being \$29,500,000 (estimated) as against \$31,930,000 for 1926. Of ferro-alloys the production again rose sharply in 1926 to 376,301 long tons, from 300,277 for 1925; \$35,975,381 in value for 1926 and \$29,143,978 for 1925. The total value of the State's mineral products was \$1,055,766,077 for 1926; \$867,196,142 for 1925.

FINANCE. State expenditures in the year ended May 31, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$82,222,896 (of which \$23,658,223 was aid to local education); for conducting public-service enterprises, \$78,079; for interest on debt, \$4,103,911; for permanent improvements, \$30,709,012; total, \$117,113,898 (of which \$37,967,816 was for highways, \$11,850,441 being for maintenance and \$26,117,375 for construction). Revenues were \$130,938,414. Of this, special taxes formed 40.9 per cent; departmental earnings and charges for officers' services, 7.2 per cent; sales of licenses and taxation of gasoline, 39.8 per cent. No general property tax was levied by the State. Net State funded debt on May 31, 1927, was \$92,400,007; all but a relatively small part of the total was in highway bonds.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 11,261.05. There were built in 1928, 12.15 miles of first, 2.18 of second, and 0.8 mile of third, track.

EDUCATION. According to State Superintendent Keith, in the *Journal* of the National Education Association, an extended study of the relations of secondary schools and colleges in the State of Pennsylvania was undertaken by the Carnegie Foundation in conjunction with State educational authorities. The school census for the academic year 1926-27 showed a total of 1,948,124 children between the ages of six and sixteen. There were enrolled in the public schools 1,848,881 pupils, of whom 1,594,808 were in elementary schools and 254,073 in high schools. The expenditures for public-school education in the year 1926-27 were \$193,990,728. The median salary of the teachers was \$1412.

CHARITIES AND CORRECTIONS. The State department of welfare, as functioning in 1928, under statute of 1921, had at its head a Secretary of welfare, (Mrs.) E. Grace McCauley, and was divided into four bureaus. The bureau of children covered the field of child welfare; in 1926 there were reported to be about 24,000 institutionalized children in the State, mostly cared for by 238 institutions, although in many cases domiciled in private families. The bureau of children administered a mothers' assistance fund, in coöperation with county authorities. The bureau of assistance had charge of dispensing other State charity funds among institutions not State-owned, and of supervising almshouses and the like. The bureau of mental health supervised insane hospitals, State and other, and other institutions for the mentally abnormal; it administered the State's mental health law. The Bureau of Restoration had charge of penal and reformatory institutions, including supervision of county prisons and the development of State

prison industries. The State maintained at the beginning of 1928 nine mental hospitals with a combined capacity of about 11,000 patients; four State schools for mental defectives (combined capacity about 3800); three sanatoria for the tubercular (capacity, 2000); ten general hospitals, for the most part small in the coal regions, for the sick and injured; two schools for the deaf (total capacity about 150); Pennsylvania Soldiers' and Sailors' Home, Erie, capacity 600; Soldiers' Orphans' Industrial School, Scotland, Pa., 269; Pennsylvania Training School for Delinquent Children, Morganza, capacity 514; State Industrial Home for Women (delinquents), Muncy, capacity 124; Pennsylvania Industrial Reformatory (males from 15 to 25), Huntingdon, capacity 804; three State penitentiaries, at Philadelphia, Pittsburgh, and Rockview, combined capacity 3350. There was under construction the new Eastern State Penitentiary at Skippack, near Philadelphia; likewise, at Selinsgrove, the State Colony for Epileptics.

POLITICAL AND OTHER EVENTS. A decision of the State supreme court closely affecting the finances of the State was rendered July 2. According to this decision the existing constitutional amendments enabling the Commonwealth to borrow \$100,000,000 for highway construction applied only to the borrowing of an initial total, and did not convey power to issue new bonds as some of the original lot were redeemed. This ruling destroyed the contention of the State administration that the \$100,000,000 represented a perpetual borrowing capacity. In consequence, the road construction plans of the State were seriously disturbed. The sum of \$200,000 was supplied by private donation to augment a State appropriation for the purchase of Cook Forest, an 8000-acre tract of uncut timber chiefly in Clarion County, said to contain the greatest stand of virgin white pine remaining in the East. The State, prior to this purchase, held a total of 1,130,000 acres of public forest land, which had been acquired in the course of 30 years.

The investigation of the Pennsylvania senatorial primary election of 1926 by the Senate's special primary investigating committee, known as the Reed committee, continued in 1928. A subcommittee of the Senate Committee of Privileges and Elections, under Senator Waterman, recounted the ballots of Philadelphia, Delaware, Allegheny, Schuylkill, Luzerne, and Lackawanna counties, to determine the contest of Vare's election, which had been brought by the defeated Democratic candidate, William B. Wilson. The Waterman subcommittee, in addition to counting the election ballots, inquired as to the printing and distribution of these ballots, to determine the possibility of fraud in these operations. It was testified that 150,000 ballots above the number required in Philadelphia had been printed, but had later been destroyed. Several poll-tax collectors in that city testified July 9 that poll-tax receipts had been issued to and distributed by "some one unknown," the apparent implication being that adherents of Vare had furnished these receipts to persons whom they wished to vote for him.

The Reed committee, investigating the primary as distinct from the election, found Sheriff Thomas W. Cunningham, of Philadelphia, in contempt of the Senate for refusing to testify the source of a sum of \$50,000 contributed by him in

1926 to the Vare campaign. Cunningham sought relief in the Federal District Court, which decided that he must stand trial at Washington. Vare himself suffered a stroke of apoplexy in August, and his illness, combined with the then current national political campaign, led to reduced activity in the Pennsylvania investigations thereafter.

A substantial number of the judges and district attorneys of the State met the members of the State Penal Commission April 6, and recommended more strict penal laws in various respects. A resolution recommended the repeal of the Ludlow Act providing indeterminate sentences, and the substitution of a system of graduated penalties, made more severe for repeating offenders. The Conowingo hydro-electric generating station of the Philadelphia Electric Company, on the lower Susquehanna River was completed as to two of its four 54,000-horse-power generating units and began operation March 1.

A suit brought in the Federal Court at Pittsburgh by members of the Ku Klux Klan seeking damages and an injunction to prevent five ousted members from conducting initiations, and a counter suit of these members for a receivership of the Pennsylvania Klan organization were dismissed, the Court finding that the evidence had established gross violations of the law and that the Klan should have no standing as a plaintiff. A feud in the labor organizations of the Pittston anthracite mining district broke out early in the year. It was waged over a difference connected with the contract mining system, and led to the assassination of several of the organization leaders. The Baldwin Locomotive Works, the largest plant of its type in the world, started in July to remove its business from the Philadelphia manufacturing district to a 650-acre site outside the city, at Eddystone, near the Delaware River. The area of Japanese beetle infestation in the State increased greatly along the East branch of the Susquehanna River, some 4000 square miles between Carlisle and Scranton being added to the quarantined district.

In Philadelphia the Broad Street subway was completed, but its operation was delayed by differences between the Philadelphia Rapid Transit Company and the city government over terms of lease and operation. Mayor Mackey proposed that the city acquire through condemnation the underlying franchise-holding companies of the transit company, as a move to municipal control of the transit situation. Early in July, the State public service commission delegated Judge Charles C. McChord to frame and recommend a lease to govern the operation of the Broad Street subway by the transit company. The city council authorized in May the construction of the projected \$40,000,000 Locust Street tube. The north wing of the \$15,000,000 Philadelphia Museum of Art was completed and was formally opened March 26. The Franklin Institute and the Benjamin Franklin Memorial combined in planning a memorial building to Franklin, to be erected on the Parkway at a cost of \$4,000,000, exclusive of \$3,000,000 of endowment for institutional activities.

At Pittsburgh, the Liberty Bridge across the Monongahela River was completed and opened March 27. At the first of the year, the city of Reading passed under the control of a Socialist administration under Mayor J. Henry Stump.

ELECTION. In the election of November 6, Penn-

sylvania gave Hoover and Curtis, Republican National candidates, the largest popular majority that they obtained in any State; the vote was: Hoover (Republican) 2,055,382; Smith (Democratic) 1,067,586. The vote for either ticket was larger than ever before, and the Democratic presidential vote of the State for the first time exceeded a million. United States Senator David A. Reed, Republican, was reelected, gaining a great majority over William N. McNair, his Democratic opponent. The usual overwhelmingly Republican delegation to the House of Representatives was elected, one of three formerly Democratic seats being lost.

OFFICERS. Governor, John S. Fisher; Lieutenant-Governor, Arthur H. James; Secretary of the Commonwealth, Charles Johnson; Treasurer, Samuel S. Lewis; Auditor-General, Edward Martin; Attorney-General, Thomas J. Baldrige; Superintendent of Public Instruction, John A. H. Keith.

JUDICIARY. Supreme Court: Chief Justice, Robert von Moschzisker; Judges: Robert S. Frazer, Emory A. Walling, Alexander Simpson, Jr., John W. Kephart, Sylvester B. Sadler, William I. Schaffer.

PENNSYLVANIA, UNIVERSITY OF. A non-sectarian institution of higher education, at Philadelphia, Pa., primarily for men, but with certain courses open to women; founded in 1740. It is composed of the College of Arts and Sciences; the Towne Scientific School (engineering and chemistry); the Moore School of Electrical Engineering; the Wharton School of Finance and Commerce; the school of fine arts (architecture, fine arts, music); the school of education; the graduate school; and the professional schools of medicine, graduate medicine, law, dentistry, veterinary medicine, and hygiene and public health. The 1928 autumn enrollment was 14,647, including all schools and departments. Of those enrolled, 8823 were candidates for degrees; 2916 were candidates for certificates; and 2908 were partial students and auditors. The enrollment in the 1928 summer session was 2271. The faculty numbered 1350. The library contained 675,000 bound volumes and 75,000 pamphlets. The productive funds amounted to \$13,916,495, and the income for the year to \$698,784. New additions to the university's buildings during the year included: the new anatomy wing of the medical laboratories and the Francis S. McIlhenny Dormitory.

Among the various gifts and subscriptions received were the following: \$150,000 from the estate of the late Miss Nina Lea, for the establishment of the Henry Charles Lea Professorship of History; a bequest under the will of Craig D. Ritchie of \$106,000, of which \$21,000 was to be used for endowment of the library, and the balance to provide income for general purposes; \$100,000 from Col. Louis J. Kolb, to establish the Kolb Foundation for the treatment of cancer; a gift of \$125,000 for medical research in the school of medicine, and the establishment of a foundation for the advancement of medical science and the promotion of education in the liberal arts, in the amount of \$1,000,000 from Edward B. Robinette. A bequest of \$500,000, to create the Charles Lennig Fund in Aid of Instruction in Theoretical and Practical Mechanics, became available during the year and was to be used to acquire scientific works, structures, instruments, etc., for the Towne

Scientific School of the University; and another bequest of \$200,000 from the estate of Charles Lennig became available to establish the Charles Lennig Beneficiary Fund, the income of which was to be used to provide free scholarships.

The freshmen who entered in the autumn of 1928 were the first whose selection was governed by a new ruling that only those applicants who ranked in the first quarter of the graduating class of a recognized secondary school would be exempt from college entrance examinations. The Provost of the University was Josiah H. Penniman, Ph.D., Litt.D., LL.D.

PENNSYLVANIA ACADEMY OF FINE ARTS. See ART EXHIBITIONS; ART MUSEUMS.

PENNSYLVANIA STATE COLLEGE. A non-sectarian, State institution for the higher education of men and women, at State College, Pa., founded in 1855. On Sept. 15, 1928, the enrollment totaled 4069, distributed as follows: Agriculture, 559; chemistry, 363; education, 603; engineering, 1170; liberal arts, 851; mines and metallurgy, 182; graduate school, 143; specials, etc., 54. There were 2786 students registered in the 1928 summer session. The faculty numbered 525, including the home economics extension staff. The productive funds of the college amounted to \$517,000, and the income for the year \$3,499,435. The library contained 108,569 volumes. A large storage building was completed in October, 1927, and work was started on a \$2,000,000 building programme. The completed projects at the end of 1928 included an infirmary, costing \$114,000; gymnasium, \$505,000; sheep barn, \$41,000; veterinary hospital, \$10,000; poultry brooder house, \$27,000; dairy barn addition, \$11,000; and winter sports park, \$24,500. Buildings under construction included: an engineering unit to cost \$350,000; chemistry unit, \$253,000; biological unit, \$180,000; a students' union and other agricultural buildings were included in the plans for the biennium 1927-29. An \$8,000,000 bond issue for the erection and equipment of buildings at the college was submitted to the voters of Pennsylvania in November, 1928. President, Ralph D. Hetzel, LL.B., LL.D.

PENOLGY. See CRIME.

PENSIONS. See OLD-AGE PENSIONS; and UNITED STATES. *Pensions.*

PERAK, pà'ràk'. The most northern of the Federated Malay States. See FEDERATED MALAY STATES.

PERKIN MEDAL. See CHEMISTRY, INDUSTRIAL, under *Medals.*

PERMANENT COURT OF INTERNATIONAL JUSTICE. See ARBITRATION, INTERNATIONAL; LEAGUE OF NATIONS; WORLD COURT.

PERMINVAR. See PHYSICS.

PEROXIDES. See CHEMISTRY, INDUSTRIAL.

PERSIA. A monarchy of southwestern Asia, extending north from the Persian Gulf and the Gulf of Oman to the Caspian Sea. Capital, Teheran.

AREA AND POPULATION. The area has been variously estimated at from 628,000 to 635,135 square miles; the population at from 8,000,000 to 10,000,000, about 3,000,000 of whom are nomads, among whom Turks, Kurds, Leks, and Arabs predominate. The number of Europeans has been placed at 1200. The population of Teheran has been given at 350,000, but this figure is merely conjectural. Other important cities with their estimated populations are: Tabriz, 180,000;

Isfahan, 100,000; Meshed, 85,000; and Resht, 80,000. The great mass of the people are Moslems of the Shiite sect.

EDUCATION. Educational statistics for 1927 showed that there were in Persia 298 government schools, 272 national schools, 112 private schools, 45 foreign schools, 270 religious schools (mosques), and 2257 "Maktab" schools, or a total of 3263 establishments. In the first four groups (non-religious schools) a total of 65,991 boys and 18,050 girls attended. In religious schools and Maktabas there were 134,987 pupils of both sexes. The Government pays the entire cost of the government schools and grants are paid to the public, private, and foreign schools.

PRODUCTION, ETC. Agricultural production during 1927 was generally lower than in the previous year because of water shortage and damage from locusts. Cereal production was estimated at 10 per cent below normal, but with rice 5 per cent below normal. The cotton crop of 1927 was placed at 43,200,000 pounds, or 10 per cent less than in 1926. Tobacco production was estimated at 26,500,000 pounds as compared with 25,500,000 in the previous year. Tea production was expected to reach 99,000 pounds as against 80,000 pounds in 1926. Wool production was placed at 14,000,000 pounds as against 9,810,000 in 1926. Opium production was estimated at normal, or approximately 1,950,000 pounds. Fair harvests were indicated for nuts and fruits.

Operations of the rug industry during 1927 compared favorably with the previous year. Exports for 1926-27 were valued at \$11,960,000 and estimates for the 1927-28 year forecasted an equally successful year. General conditions in the rug industry during recent years have not been entirely satisfactory and have threatened the exports of this important manufacture. This fact, together with the increasing competition being encountered in the foreign markets, caused the Government to take steps to correct the situation by appointing a commission to investigate this industry during 1927. The commission made the following recommendations: That a standard form of contract be adopted in each weaving district; that local commissions be established to settle disputes arising out of breach of contract; that the factory system be gradually extended in place of the contract system; that breeds of sheep be improved and slaughter be rigidly controlled; that schools of design and dyeing be fostered and use of imported dyes be strictly regulated. These regulations were adopted and steps taken toward their enforcement.

Petroleum is by far the principal mineral. Other mineral deposits include iron ore, coal, copper, lead, manganese, marble, cobalt, and nickel, but of most of these there is little or no production. Production by the Anglo-Persian Oil Co. for the year 1927 was put at 36,800,000 barrels, not much more than in the two previous years. Payments to the Persian Treasury in the form of royalties for the year ended Mar. 31, 1927, were £1,390,000 as compared with £728,780 for the fiscal year 1925-26.

COMMERCE. During the fiscal year 1926-27 the value of both imports and exports (excluding mineral oils) declined as compared with that for the previous year. The adverse balance was somewhat smaller. The principal items of export and import for 1926-27 are listed in the table on the next page.

PERSIA'S FOREIGN TRADE FOR THE FISCAL YEAR ENDED MARCH 20, 1927

Commodity	1926-27	
	Metric tons (unless otherwise designated)	Thousand kranas *
IMPORTS		
Cotton textiles	14,570	221,035
Sugar	69,829	123,997
Tea	6,813	63,747
Vehicles of all kinds and accessories {	7,414 {	35,799
number {	1,066 {	
metric tons	39,813	31,437
Mineral oils and greases ...	2,662	24,579
Cotton yarns	6,114	24,072
Machinery, tools, and implements	485	21,145
Wool textiles	1,992	17,392
Huberdashery, toys, and household utensils	473	12,702
Textiles, cotton mixed with artificial silk	8,467	10,919
Nails, screws, rivets, and tubes	11,141	9,893
Rice	312	8,678
Clothing	7,247	8,571
Chemical products	4,443	8,438
Iron manufactures other than machinery .....	.....	7,564
Gold and silver coins .....	.....	5
Silver bars	250	7,145
Textiles, wool and cotton mixture	7,457	6,880
Iron and steel, in ingots, bars, and plates; and structural iron	7,459	6,268
Flour	1,750	4,758
Glassware	977	4,631
Drugs, various	1,195	4,218
Jute and hemp textiles	10,471	3,282
Cement	2,698	1,814
Wheat, barley, and other food cereals	74	1,722
Raw lambskins	61,214	110,576
All others	268,972	787,397
Total	76,850,000	.....
Equivalent in dollars .....	.....	.....
EXPORTS		
Mineral oils	4,482,660	654,383
Carpets and rugs, wool	5,021	122,564
Opium	723	96,116
Cotton, raw	18,324	56,492
Fruits, fresh and dried	51,992	32,019
Wool, raw	6,068	23,360
Rice	34,642	20,526
Gum tragacanth	2,815	14,046
Prepared hides	893	10,618
Gold and silver coins .....	.....	8,647
Sheep casings	193	5,590
Raw fox, marten, and other skins	79	5,899
Silk cocoons	381	4,952
Raw lambskins, pieces	720,568	4,468
Other raw skins	1,312	3,769
Cotton textiles	188	3,549
Silk textiles	26	3,107
Tobacco, unmanufactured	1,150	2,822
Tea	197	2,734
All others	26,556	28,955
Total	4,633,160	1,104,115
Equivalent in dollars .....	.....	107,762,000

* The kran averaged \$0.0976 in 1926-27.

FINANCE. Revenues for 1926-27 according to preliminary returns, totaled \$28,780,000, as compared with \$26,200,000 for the previous year. Road tolls, sugar and tea monopoly, and public domains showed the largest increases; declines were recorded from direct taxation, customs, telegraphs, and transport service. A surplus over expenditures was indicated for both years. The last budget to receive parliamentary approval was for the fiscal year 1925-26. A budget for 1926-27 was introduced into Parliament but was not passed. For the year 1927-28 expenditures were authorized monthly at the rate of one-twelfth of the sums utilized in the 1926-27 budget. The total was expected to approximate \$25,000,000. On June 20, 1927, the funded public debt totaled

£1,667,621 and the floating debt \$788,459; this compares with £1,687,036 and \$2,038,426, respectively, on Dec. 30, 1926. Interest paid during this period on the funded debt totaled £46,900, and on the floating debt, \$122,000. Treasury resources amounted to \$19,558,000 on June 22, 1927, as compared with \$17,167,000 on Dec. 30, 1926.

COMMUNICATIONS. As noted in the Year Book for 1927, a survey was made for a Trans-Persian Railway during 1927. During 1928 it was announced that a German firm had signed a contract involving 470 miles of the projected 1070-mile line. Work was to be started immediately, and the section was to be completed in three years. A number of difficulties were foreseen on this part of the line, especially with regard to transporting material, which had to be sent via the Black Sea, the Caucasus Republic, and the Caspian Sea. It was reported that the total cost of the project was to be \$80,000,000. The railroads opened for traffic in 1928 totaled about 190 miles. During 1927 approximately 400 miles of dirt-and-gravel roads and 30 miles of macadam road were built, making a total for the country of 5440 miles of dirt road and 1150 miles of macadam road.

In 1926-27 the ports of the Persian Gulf were entered by 11,276 vessels of 9,374,000 net registered tons, with a cargo of 131,780 tons; clearances totaled 11,224 vessels of 9,354,000 tons, with a cargo of 4,599,788 tons. Entrances at the ports on the Caspian Sea totaled 2176 vessels, of 390,000 tons, with a cargo of 110,560 tons; clearances, 2158 vessels of 380,000 tons, with a cargo of 74,846 tons. The river port of Karun was entered by 1140 vessels of 62,000 tons, with a cargo of 25,503 tons; clearances totaled 1140 vessels of 62,000 tons, with a cargo of 7303 tons.

GOVERNMENT. Executive power is vested in the Shah, an absolute ruler down to 1906, when he consented to a constitutional form of government with a parliament or Mejliss. The actual running of the Government is in the hands of a cabinet. Reigning Shah in 1928, Riza Khan Pahlevi, publicly proclaimed Dec. 16, 1925; crowned, Apr. 25, 1926.

HISTORY. During the early part of the year there were rumors in the press of uprisings among the peasants of the outlying provinces of the country, but these reports appeared to have been overestimated as to importance. The trouble which arose over the question of excessive taxation was easily quelled by government troops. Anglo-Persian relations were greatly improved during the year through the medium of several agreements signed between the two countries concerning trade, commerce, and the rights of citizens of Great Britain in Persia. As noted in the preceding Year Book, the American financial adviser to Persia, Dr. Arthur C. Millspaugh, had serious differences with the Persian Government, which sought to limit his powers. He refused to renew his contract, and after a brief interim when his duties were carried on by the administrator-general of finances, he was succeeded by Dr. Lindenblatt, a German banker. The release of Dr. Millspaugh was merely another evidence of the intention of the Shah to cast aside all foreign control and capitulations and place Persia on an equal footing in the family of nations with all Western countries.

The situation in Persia was parallel in many ways to that of modern China, which during the

year was also partly successful in throwing off foreign control. The Shah of Persia had a little better success than his neighbor in Afghanistan in introducing Western ideas in his country. He completely emancipated women from the century-old customs which had surrounded them, much to their apparent delight and without a revolt ensuing on the part of the natives.

PERSIAN ARCHÆOLOGY. See ARCHÆOL-OGY.

PERSIAN LITERATURE. See PHILOLOGY, MODERN.

PERU, pē-rōō'. A republic on the Pacific coast of South America; bounded on the north by Ecuador and Colombia; on the east by Brazil and Bolivia; and on the south by Bolivia and Chile. Capital, Lima.

AREA AND POPULATION. On the basis of an estimate by the Lima Geographical Society in 1915, the total area, including Tacna, is 532,047 square miles. The last official census was in 1876, when the population was fixed at 2,660,881; an estimate in 1896 placed it at 4,634,601; another in 1921 placed it at about 5,500,000, although grave doubts were expressed in some quarters as to whether the population was increasing at all. The above figures do not include an indeterminate number of uncivilized Indians. The capital, Lima, according to the official census of Dec. 17, 1921, had 176,467 inhabitants. The estimated population of the principal cities in 1925 was as follows: Lima, 220,000, with suburbs, 260,000; Callao, 66,000; Arequipa, 58,000; Cuzco, 37,000; Ica, Trujillo, and Chiclayo, 25,000 each.

EDUCATION. Primary instruction is free and compulsory. In 1928 there were 3461 public primary schols with 6012 teachers and 272,490 pupils, and 30 public secondary schools with 583 teachers and 8646 pupils. There were also six normal schools with 60 teachers and 628 pupils, and 12 trade schools with 43 teachers and 551 students. Higher education is provided at the central university in Lima, known as the University of San Marcos, as well as in a few other universities and colleges and in several technical schools.

PRODUCTION, ETC. Contrary to the general impression, it is agriculture and not mining which is the principal source of income in Peru. Fully 80 per cent of Peru's estimated population of 5,000,000 is dependent either directly or indirectly upon agriculture. The most productive part of the country is the coastal zone, a narrow strip of land extending from the Pacific Ocean to the foothills of the Andes, and except where traversed by short rivers descending from the mountains it is typical desert country. The valleys formed by these rivers are the source of more than 90 per cent of all the cotton and sugar (the principal money crops) grown in the country, and their production is carried on by irrigation. In his message read before Congress on July 28, 1928, the President stated that of the 362,000 tons of sugar produced in the past year 300,432 tons were exported at a value of £P4,597,381. A cotton crop estimated at 60,000 tons furnished exports of 57,117 tons, worth £P6,762,637. The rice crop amounted to 28,145 tons which, though an increase over the previous crop, did not prevent the importation of 34,310 tons. Irrigation work undertaken by the Government in the past eight years has placed 26,000 hectares under irrigation. Following the example of the government, private individuals have irrigated 2080

hectares. With the projects already undertaken, there were to be 50,000 hectares under irrigation in 1929, and from 1931 on 12,000 hectares annually were to be irrigated.

The President also gave in his message an account of the following industries:

Each day the development of the mining and oil industries in Peru is more apparent. The number of claims on record in 1927 was 493,967, of which 469,293 were petroleum concessions. These figures show an increase of 180,371 claims over the previous year. The mineral production in 1927 was valued at 25,214,284 Peruvian pounds, or an increase of 2,402,514 Peruvian pounds, 11 per cent, over that of the previous year. The number of workers employed in 1927 in the mining industry was 30,000; they received about 3,000,000 Peruvian pounds in wages. In the first half of this year the lead smelter in Casapalca began operations, exporting during April 474,925 kilograms with a silver content of 5845 kilograms, and in May 1, 688,499 kilograms of lead with 17,564 kilograms of silver and 3665 kilograms of gold. Cement production increased in amount 68 per cent, and in value, 77 per cent.

Petroleum production amounted in 1927 to 1,340,600 tons, worth 15,416,900 Peruvian pounds, of which 87 per cent was exported and the remaining 13 per cent used for domestic consumption. The production of natural gasoline increased 6,000,000 gallons over that of 1927, being 17,500,000 gallons. Plants for the production of natural gasoline have been enlarged in La Brea, Paríñas, and Lobitos, a new plant with capacity for producing 10,000 gallons every 24 hours having been established in the latter place.

COMMERCE. Peru's foreign trade has fluctuated directly with the agricultural situation. During these years when both cotton and sugar were commanding increasing prices, imports climbed correspondingly and when exports of these products decreased total imports likewise fell off, although the reaction was usually retarded. The principal imports into Peru are foodstuffs, machinery and vehicles, textiles, and manufactures of metals, these classifications ordinarily accounting for more than half of the total imports. The United States supplied about 45 per cent of the foodstuffs in 1927, the principal items being lard, wheat and wheat flour, and canned goods; Hong Kong furnished 15 per cent, consisting principally of rice, while Australia took third place, its contribution being composed largely of wheat. The United States is the outstanding source for Peruvian imports of machinery and vehicles, contributing ordinarily about 65 per cent of such imports. The nearest competitor is Great Britain, with Germany a close third. In textiles, however, Great Britain continued to hold the lead, followed by the United States and Germany.

In 1927 Peruvian imports totaled £P19,377,814 as compared with £P19,560,934 in 1926; exports in 1927 totaled £P31,197,725 as compared with £P23,975,784 in 1926. The increase of exports (£P7,221,941) was due to the larger foreign sales of cotton (partly due to the Mississippi floods), minerals, wool, and by-products of cotton and other materials.

FINANCE. The Peruvian budget for 1928 as passed on Dec. 31, 1927 balanced at £P11,113,650. The Peruvian budget for 1929 was £P12,220,000, apportioned as follows: For the legislative branch, £P340,000; executive office, £P1,870,000; foreign affairs, £P347,000; justice, £P1,797,000; finance, £P4,390,000; war, £P1,631,000; marine, £P675,000; and fomento, (improvement of industry and internal affairs), £P1,170,000. The internal debt increased £P171,000 and the floating debt £P647,000 in the period January 1 to June 30, 1928. The total amount

of the public debt at the end of 1926 was \$17,247,509. A national loan of \$25,000,000 in 6 per cent gold bonds, dated Oct. 1, 1928, was floated in Europe and the United States toward the close of the year.

COMMUNICATIONS. In 1926 the total length of railway line was 2118 miles, of which 1522 miles belonged to the state and 596 to private companies. In his message to Congress on July 228, 1928, the President had the following to say about railroad and highway construction:

Railroad construction during the past year throughout the Republic cost 907,617 Peruvian pounds as against 633,070 Peruvian pounds the previous year. The Ascope Railroad to the coal mines of Huayday is to be completed this year to the terminal, Cimbón, in the Province of Cajabamba. The Recuay line will be extended to the Carás line within the year. The Chuquicara-Cajabambique line providing an outlet for the Province of Pallasca, the branch from Barranca to the Lima-Huacho line, and the line from Tambo del Sol to Pachitea are being built as rapidly as possible, material worth 50,000 Peruvian pounds having been provided for the latter. Surveys for the Huancavelica-Castrovirreina line are under way, as this railroad is greatly needed for the development of that region. Other lines are under construction or being planned.

The highways completed the past year cover 2071 kilometers, constructed at a cost of 971,433 Peruvian pounds, without counting the cost of highway bridges. Besides the completed roads, there are 9053 kilometers under construction and 10,880 kilometers of highway to be constructed. The result of this highway construction is apparent in the increase of automobile imports, there now being 6000 automobiles and 4605 trucks and busses in Peru. The highway system has two main arteries north and south, branch highways from seaports to the interior, and roads bringing outlying districts into touch with railway stations. The longitudinal coastal highway has a total length of 3094 kilometers, of which 2816 kilometers are open to traffic. The Peruvian section of the Pan-American Highway has a total length of 2885 kilometers, of which 2505 kilometers are now in use.

The President during the year authorized the extension of port works in Callao, costing about \$6,000,000, to consist of a new dock with four piers for ships of 37 feet draft. From these piers freight may be transported directly by electric cars to the warehouses. The existing dock was to be used for coastwise trade. In order to protect both the old dock and the new piers, a large breakwater was to be constructed. A large petroleum station also was to be erected here with space for tanks containing 20 to 30 tons of oil to refuel ships docked at the new piers. Land was to be expropriated for the construction of factories, work shops, customs agencies, etc. These improvements, to be completed in three years, would make Callao one of the best equipped ports in South America.

GOVERNMENT. Executive power is vested in a president elected for five years and eligible for reelection indefinitely under a constitutional change adopted in 1927; and legislative power in the Congress consisting of a Senate with 35 members and a House of Representatives with 110 members. The President acts through a cabinet of seven members, appointed and removed at his pleasure. President in 1928, Augusto B. Leguía.

HISTORY. Peru passed through a calm and quiet year under the benevolent dictatorship of President Leguía. As noted in the preceding YEAR BOOK, the constitution of the country was changed to make his tenure of office as long as he retained the confidence of the people. He certainly seemed to retain that confidence throughout the year and, if anything, to strengthen his hold on his people. The United States Ambassador to Peru, Miles Poindexter, was succeeded during the

year by Ambassador Moore. For the restoration of more or less friendly relations between Chile and Peru during the year, consult the article on **ARBITRATION, INTERNATIONAL.**

PETROLEUM. The world's production of crude petroleum during 1928 was estimated by the U. S. Bureau of Mines at 1,322,896,000 barrels, an increase over 1927 of 61,823,000 barrels, or 5 per cent. Production outside of the United States increased by approximately 61,000,000 barrels, or 17 per cent, while domestic production was estimated to have been only slightly greater than that reported for 1927. As a consequence, the ratio of the United States production to the world total dropped from 71.5 per cent in 1927 to 68.2 per cent in 1928. In this preliminary summary prepared in the Petroleum Economics Division by E. B. Swanson, the following comments are made: Venezuela, with a 1928 production of 106,000,000 barrels, as compared with 63,134,000 barrels in 1927, showed the largest increase and moved from fourth place to second among the oil-producing countries, its output being 8 per cent of the world total as compared with 5 per cent in 1927. The output of Lagunillas field increased from 28,826,000 barrels in 1927 to approximately 63,000,000 barrels in 1928. The La Rosa and Mene Grande fields also showed substantial increases. The gain in Russian output resulted from gusher production in the Surakhany and Bibi-Eibat fields at Baku and in the Novo-Grozny field, as well as from increased production by pumping. Discovery of a new pool was reported at Kara-Chukhur, in the Baku area. Mexico, which has ranked second or third among oil-producing countries since 1911, dropped to fourth place when its 1928 production decreased approximately 14,000,000 barrels from its 1927 total. Production in Persia, Rumania, and the Netherland East Indies continued to increase and these countries retained their respective positions in fifth, sixth, and seventh places among the oil-producing countries. Trinidad, with a production of 7,750,000 barrels, drew close to British India and threatened its position as the leading producer among the British Colonies. The Palo Seco area, which was producing about 18,000 barrels monthly in 1927, was reported in 1928 to be producing that amount weekly. Iraq is listed separately as a producing country for the first time. The estimate of 1928 output included the production of the Naft Khanah field near Khanaquin as well as that produced in Mosul and used in field operations.

The accompanying table shows the output of the various oil-producing countries as reported officially to the U. S. Bureau of Mines for 1927 and the estimated production of these countries during 1928. These estimates were based upon information obtained from consular officers located in various foreign countries, information received from producing companies, and such official figures as were available.

UNITED STATES CRUDE PETROLEUM. According to preliminary figures compiled from reports received at the Bureau of Mines of the Department of Commerce, from companies that operate gathering lines, 900,364,000 barrels of crude petroleum were transported from producing properties in the United States during 1928. The final figure of total production, which would include crude oil consumed for fuel on the leases and the net change in producers' stocks, might amount to 902,000,000 barrels. If this figure was

WORLD'S PRODUCTION OF PETROLEUM IN
1928, BY COUNTRIES, COMPARED
WITH 1927

Countries	Barrels of 42 U. S. gallons 1928	Barrels of 42 U. S. gallons 1927
United States	902,000,000	901,129,000
Venezuela	106,000,000	63,134,000
Russia	87,800,000	77,018,000
Mexico	50,150,000	64,121,000
Persia	42,080,000	39,688,000
Rumania	30,600,000	26,368,000
Netherland East Indies	28,500,000	25,967,000
Colombia	19,900,000	15,002,000
Peru	11,970,000	10,135,000
Argentina	9,100,000	8,630,000
India, British	8,300,000	7,878,000
Trinidad	7,750,000	5,712,000
Poland	5,530,000	5,342,000
British Boreno—Sarawak	5,290,000	4,943,000
Egypt	1,840,000	1,267,000
Japan and Taiwan	1,800,000	1,700,000
Ecuador	1,090,000	537,000
Germany	683,000	663,000
Iraq	650,000	200,000
Canada	618,000	477,000
France	520,000	504,000
Sakhalin, Russian	509,000	440,000
Czechoslovakia	150,000	149,000
Italy	43,000	44,000
Other Countries	28,000	25,000
Total	1,322,896,000	1,261,073,000

attained, it would represent a new record for total production, as it was slightly above the 901,129-000 barrels produced in 1927. This was somewhat surprising in view of the apparent success which attended the many efforts to control output. These efforts were confined, in the main, to West Texas and the Seminole district. In the former, though most of the wells were shut down or pinched in immediately upon completion, the total production for the year was more than twice what it was in 1927, which more than offset the comparatively small decline in the total output in the greater Seminole district. The greatest efforts at proration in Oklahoma were concentrated on the Little River pool of the Seminole district which, by agreement, was held back until August 15. This and the natural decline of the older pools in Seminole were largely responsible for the steady decrease in the output of Oklahoma during the first four months of the year. However, though Seminole continued to decline for the next few months, the output of the State showed an increase in both May and June. The probable explanation of this is that the larger companies, faced with an increased demand for high-gravity crude and being averse to withdrawing relatively high-cost crude from storage, increased their pipe-line runs in the older fields of the State. This same situation applied to Texas, to a minor extent, it was believed.

Although the production of crude petroleum remained at a comparatively high level throughout 1928, a much better balance between supply and demand was maintained than during 1927 according to the Bureau of Mines. This was illustrated by an analysis of stocks of all oils, which increased approximately 25,000,000 barrels in 1928 as compared with about 68,000,000 barrels in 1927. The domestic demand for all oils increased 7 per cent in 1928, which was the chief reason for the smaller increase in stocks.

Texas, with an output of 256,888,000 barrels, was for the first time the leading producing State. Oklahoma dropped from first to second and California, from second to third. Production in Panhandle, Gulf, and Central Texas fell off, but these decreases were more than compensated by

the increase in Western Texas, which produced approximately 125,000,000 barrels in 1928 as compared with 50,000,000 barrels in 1927. The largest factor in the decrease in Oklahoma was the decline of the Seminole district, which, exclusive of St. Louis-Pearson and Maud, produced about 110,000,000 barrels in 1928 as compared with 135,000,000 barrels in 1927. Production in California showed a slight increase due to the comeback at Long Beach and to a last-minute spurt at Santa Fe Springs. Though Kansas, the fourth State in order of production, declined in output in 1928, the potentialities of the State were greatly increased by important discoveries late in the year. The Champagnolle field of Arkansas did not come up to expectations and the output of the State again declined.

UNITED STATES PRODUCTION OF CRUDE
PETROLEUM BY FIELDS, STATES, AND
CLASSIFICATION BY GRAVITY

STATISTICS FROM PETROLEUM ECONOMICS
DIVISION, U. S. BUREAU OF MINES

Petroleum transported from producing properties
[Thousands of barrels of 42 U. S. gallons]

Field	1928	1927 ^a
Appalachian	30,968	30,454
Lima-Indiana	1,677	1,835
Michigan	595	439
Illinois and S. W. Indiana	7,422	7,720
Mid-Continent	552,980	546,987
Gulf coast	45,719	52,069
Rocky Mountain	29,021	30,429 ^b
California	231,982	231,196
U. S. total	900,364	901,129

^a Final figures.

^b Includes Alaska.

State	1928	1927 ^a
Arkansas	32,295	40,005
California	231,982	231,196
Colorado	2,722	2,831
Illinois	6,459	6,994
Indiana:	1,053	852
Southwestern	963	726
Northwestern	90	126
Kansas	38,332	41,069
Kentucky	7,325	6,719
Louisiana:	21,626	22,818
Gulf coast	6,805	5,050
Rest of State	14,821	17,768
Michigan	595	439
Montana	3,925	5,058
New Mexico	959	1,226
New York	2,573	2,242
Ohio:	7,030	7,593
Central and East	5,443	5,884
Northwestern	1,587	1,709
Oklahoma:	249,558	277,775
Osage County	19,667	23,586
Rest of State	229,891	254,189
Pennsylvania	9,876	9,526
Tennessee	47	60
Texas:	256,888	217,389
Gulf coast	38,914	47,910
Rest of State	217,974	170,370
West Virginia	5,704	6,023
Wyoming:	21,415	21,307
Salt Creek	14,103	14,399
Rest of State	7,312	6,908
Total	900,364	901,129
Daily Average	2,460	2,469

^a Final figures for 1928 will include petroleum consumed on the leases and produced but not transported from producing properties, which may amount to 2,000,000 barrels.

^b Final figures include 7,000 barrels produced in Alaska and Utah.

Classification by gravity (approx.)	1928	1927
Light crude	806,534	788,794
Heavy crude	93,830	112,335

Stocks of crude petroleum east of California increased from 352,038,000 barrels on hand January 1 to 368,431,000 barrels on hand at the end of the year. This increase, which was all in light oil grades, was composed of a small increase in foreign refinery stocks and a sizeable increase in tank-farm stocks in the mid-continent field. Stocks of light crude in California again decreased, but stocks of heavy crude and fuel oil increased.

Imports of crude petroleum in 1928 amounted to 79,583,000 barrels, as against 58,382,632 barrels in 1927, an increase of 36 per cent. Imports from Mexico, 17,584,211 barrels, again fell off from 1927 figures, 26,019,058 barrels, but those from Venezuela, 21,987,319 barrels, virtually doubled those of 1927, 11,423,575 barrels. Imports of crude petroleum from the Netherland West Indies are stated at 24,989,387 barrels in 1928, as compared with 10,136,248 barrels in 1927. Shipments of crude from California through the Panama Canal to eastern ports declined materially, becoming practically negligible.

REFINED PRODUCTS. In the United States runs to stills of crude petroleum, both domestic and foreign, in 1928 amounted to 912,831,000 barrels, an increase over 1927 of 10 per cent. Runs of foreign crude amounted to 77,674,000 barrels, as compared with 50,106,000 barrels in 1927, a gain of over 50 per cent. Gasoline production in 1928 totaled 377,183,000 barrels, which represented an increase over 1927 of 14 per cent. This increase resulted both from increased runs to stills and from an increase in percentage recovery of from 39.6 per cent in 1927 to 41.3 per cent in 1928. The increased yield of gasoline from crude was due partly to increased cracking activity. The indicated domestic demand for gasoline (not including the relatively small items for benzol, etc.) in 1928 amounted to 328,832,000 barrels, an increase over 1927 of 11 per cent. Exports were stated at 52,897,000 barrels as compared with 44,337,000 barrels in 1927. The situation as regarded stocks of gasoline at refineries in 1928 represented a departure from the experience of many former years. Stocks in the spring months did not accumulate to the usual extent, so that by midsummer some refiners found difficulty in filling their orders. In view of this, it was probable that the low point in stocks, 26,378,000 barrels on September 30, represented only working stocks.

The production of kerosene showed a slight increase over 1927, although the indicated domestic demand showed a slight decrease. The output of gas oil and fuel oil increased, but considerable of the increase was used as cracking stock and stocks east of California showed comparatively little change. The production, indicated domestic demand, and exports of both lubricants and wax increased. Stocks of wax underwent much the same experience as gasoline stocks, that is, were reduced to a very low level in midsummer.

The kerosene produced amounted to 60,156,000 barrels as against 56,113,000 in 1927, 22,066,000 barrels being exported in 1928, and 19,537,000 in the previous year. The output of gas and fuel oil amounted to 425,755,000 barrels in 1928, and 393,066,000 in 1927, of which 44,462,000 barrels were exported in 1928, and 47,391,000 in 1927. Thirty-four million, six hundred and fifty-nine thousand barrels of lubricants were manufactured in 1928, compared with 31,721,000 in 1927, of which 11,055,000 barrels were exported

in 1928, and 9,776,000 in 1927. There were also 630,144,000 pounds of wax produced in the United States during the year, and 584,347,000 pounds in 1927, 391,623,000 pounds being exported in 1928, and 340,423,000 in the previous year.

Similar commodities were imported into the United States during 1928 in the following quantities: Gasoline, 4,296,000 barrels compared to 5,002,000 in 1927; kerosene, 204,000 compared to 55,000 in 1927; gas and fuel oil, 7,268,000 compared to 8,124,000 in 1927; lubricants, 13,000 barrels compared to 8000 in 1927; and wax, 24,748,000 pounds compared to 20,462,000 in 1927.

NATURAL GASOLINE. According to preliminary figures, the production of natural gasoline in 1928 amounted to 1,776,000,000 gallons, an increase over the corresponding figure of 1927 of 11 per cent. Stocks of natural gasoline held at the plants decreased from 30,800,000 gallons on January 1 to 25,500,000 gallons at the end of the year. Blending at the plants decreased, but sales to jobbers increased.

EXPORTS. The refined petroleum oil exported from the United States in 1928 totaled 126,186,841 barrels of 42 gallons, valued at \$464,899,317, compared with 115,398,860 barrels valued at \$429,663,342 exported in 1927. The gasoline, naphtha, and other finished light products exported in 1928 amounted to 51,756,533 barrels valued at \$231,969,946, compared with 43,334,164 barrels valued at \$209,838,685 in 1927. The chief destinations of these products were: the United Kingdom, which received, in 1928, 15,640,770 barrels valued at \$60,813,838; France, 7,726,261 barrels valued at \$31,776,511; Canada, 4,409,565 barrels valued at \$18,574,007; and Australia, 2,751,815 barrels valued at \$14,202,853. Illuminating oil, such as kerosene, amounting to 21,852,626 barrels valued at \$93,477,916 was exported from the United States in 1928, compared with 19,352,102 barrels valued at \$79,303,008 in 1927. Of these exports, China, Hong Kong, and Kwantung received 4,769,165 barrels valued at \$28,360,856; the United Kingdom, 2,944,533 barrels valued at \$8,230,792; Japan, 2,371,610 barrels valued at \$8,090,970; Australia, 998,344 barrels valued at \$5,600,594; France, 1,669,660 barrels valued at \$5,295,059; British Africa, 669,191 barrels valued at \$4,641,955; and the Netherlands, 1,599,226 barrels valued at \$4,303,208. There were also 41,558,367 barrels of gas and fuel oil exported from the United States in 1928, valued at \$45,797,151 compared with 42,963,180 barrels valued at \$49,801,802 exported in the previous year. Lubricating oil amounting to 10,849,541 barrels valued at \$91,591,415 was exported from the United States during the year, compared with 9,605,757 barrels valued at \$88,843,128 during 1927.

PETRUNKEVITCH, IVAN ILITCH. Russian statesman, died at Prague, Czechoslovakia, June 14. He was born in Tchernigov, Russia, Nov. 22, 1842. In 1868 he was elected to the district assembly. Later he became a member of the Government Assembly and from 1869 to 1879 was a member of the local judiciary. In the latter year, however, as the result of his radical declarations in favor of reforms, he was banished to Tver, where he continued to take an active part in political matters. In 1886 he was permitted to return to Tchernigov, and was again elected to the local assembly. Moving again to Tver, he resumed there his political activity,

which led to a second exile. Subsequently Petrunkevitch took a very active part in the liberation movement of 1904-06. He was vice president of the Zemstvo congresses at St. Petersburg and Moscow in 1904, and in 1905 became a leader in the Constitutional Democratic party and was elected to the first Duma, of 1906. He made the opening address at its assemblage. After the dissolution of the Duma, he was one of the deputies at the Viborg convention, at which he delivered the opening address defending its course. For this he was imprisoned, with the other 160 delegates. Opposing the Soviet régime, Petrunkevitch with other Liberal leaders in Russia was compelled to leave the country, and he spent his last years in Switzerland.

PHILADELPHIA. See PENNSYLVANIA.

PHILADELPHIA SYMPHONY ORCHESTRA. See MUSIC.

PHILANTHROPY. See WELFARE WORK.

PHILHARMONIC ORCHESTRA. See MUSIC.

PHILIPPINES, fil'i-pîns, -pêns -pîns. The largest island group of the Malay Archipelago; a possession of the United States, ceded by Spain in the treaty of Apr. 11, 1899. Capital, Manila.

AREA AND POPULATION. Only 466 of the 7000 islands which make up the group have an area of one square mile or more. The most important islands with their area in square miles are as follows: Luzon, 40,814; Mindanao, 36,906; Samar, 5123; Negros, 4902; Palawan, 4500; Panay, 4448; Mindoro, 3794; Leyte, 2799; Cebu, 1695; Bohol, 1634; and Masbate, 1255. Total area, 114,400 square miles; population, according to the census of 1918, 10,314,310. An estimate of the population in 1927, based upon official computations, placed it at 12,353,900. The population of Manila was 285,306, according to the census of 1918. According to the same enumeration, the race distribution was as follows: Brown, 9,386,826; yellow, 50,826; white, 12,399; Negro, 7623; half-breed, 34,663. The immigrants in 1927 numbered 34,768 and the emigrants 42,821.

EDUCATION. According to the Governor's report for the calendar year 1927, the enrollment in the public schools was 1,099,127 as compared with 1,061,525 in 1926. The percentage of population in school in 1927 was 9.36 as compared with 9.17 in 1926, and the percentage of school population in school was 35.56 as compared with 34.85 in 1926. While the total enrollment in the public schools had increased, there had been for five years a steady decrease in the enrollment in the non-Christian schools. This decrease was due in part to a disinclination on the part of non-Christian parents, especially Moros, to send their children voluntarily to school, and also to a suspension for reasons of governmental policy of the application of the compulsory school law. There were in 1927, 5993 primary schools in operation, 1242 intermediate schools, and 113 secondary schools. In the secondary field of education the largest increase in enrollment recorded was in the trade schools (43 per cent). The enrollment in agricultural schools increased 10 per cent. There were 25,971 teachers employed in 1927, of whom 294 were Americans. In the same year there were 655 private schools of all grades with 86,695 students. The enrollment of the University of the Philippines under all faculties was 7553 during the year 1927-28.

PRODUCTION, ETC. The Philippine Islands are preëminently an agricultural country with an

area of about 30,000,000 hectares. Of this amount, only about 3,700,000 hectares are under cultivation, 18,800,000 hectares are covered with forests, 5,600,000 are grass and open land, 300,000 are mangrove swamp, and the rest consists of unexplored area.

The nine principal crops, which are palay (rough rice), sugar cane, coconuts, abaca, corn, tobacco, manguay, cacao, and coffee, were given a total estimated value in 1927 of \$254,439,000, or 90 per cent of the total value of all Philippine agricultural produce for that year. Only five of these crops—sugar, coconut products, abaca, tobacco, and manguay—entered into external trade, aggregating a total export value of \$80,745,000, or 92 per cent of all the exports of 1927. Adding the value of processing and manufacture, the five crops were estimated as worth approximately \$143,000,000. In addition to the major crops, the islands are well suited to the cultivation of other important tropical produce, such as rubber, tea, pineapples, citrus fruits, quinine, and camphor.

Although numerous deposits of economic minerals, such as iron ore, coal, and gold, are found in almost all the islands, the mining industry is still in its infant stage. Nearly all present-day manufacturing, except that of centrifugal sugar (37 mills), coconut oil (6 mills), desiccated coconut (7 factories), and cigars and cigarettes (3 large factories), is carried on by very small units.

COMMERCE. Trade Statistics for the calendar year 1928 indicated total value of foreign trade amounting to 289,711,444, of which imports were \$134,656,898 and exports \$155,054,546. There was an increase of imports, which in 1927 amounted to \$115,851,471, and a decrease of \$519,539 in exports. The imports reached the highest value since 1920, when they were valued at \$149,000,000. Compared with the previous year, the advance in import trade amounted to 12 per cent and represented increases for practically all items of importance and especially cotton goods. With the exception of copra, decreased market values of all leading export products contributed to the decline in total export trade, sugar shipments showing a decline of \$2,750,000 in value but slight increase in quantity. Sugar, as usual, was the leading export, the total quantity exported amounting to 569,937,628 kilos, valued at \$47,542,940, of which 534,228,520 kilos, valued at \$45,891,233, went to the United States. The copra exports for the year amounted to 234,416,772 kilos, valued at \$22,542,341, of which the United States received 182,566,022 kilos, valued at \$17,603,832. Coconut oil was exported to the amount of 142,243,147 kilos, valued at \$23,489,173, of which the United States took 140,833,659 kilos, valued at \$23,279,520. The cigar exports for the year numbered 220,884,441, valued at \$4,765,149, of which 179,569,767, valued at \$3,855,672, went to the United States. The total hemp exports in 1928 were 1,381,582 bales, value \$26,593,606, being distributed as follows: To the United States, 404,046 bales, value \$9,527,045; to United Kingdom, 359,890 bales, value \$6,239,594; to Japan, 332,031 bales, value \$5,323,401; and to other countries, 285,815 bales, value \$5,503,566. The islands' trade balance, although still substantially favorable, was reduced from \$40,000,000 in 1927 to \$20,400,000 in 1928. Of the import trade, \$83,858,068, or more than 62 per cent, was with the United States, compared

with 61.7 per cent in the previous year, and \$115,585,875, or 74 per cent of the islands' exports went to the United States, against 75 per cent in 1927. Japan, with 15 per cent of the import trade, and China, Great Britain, and Germany, in the order named, were the next most important countries of origin, and Great Britain, Japan, and Spain followed the United States as purchasers of Philippine products.

FINANCE. Preliminary reports of the department of finance for the calendar year 1928 indicated a surplus of government revenues over expenditures of more than \$2,500,000. The following statement from the Governor's report shows in brief the operation of the finances of the Philippine Government in 1926 and 1927, the currency situation, the indebtedness of the Government, and the outstanding features of the economic situation.

	1927 Pesos	1926 Pesos	Per cent increase (+) decrease (-)
Total budget revenues (actual)	\$77,977,658.68	78,413,363.51	-½
Total budget revenues (estimated in budget)	72,289,450.00	74,027,800.00	-2
Total budget expenditures (actual)	74,595,811.68	90,948,609.22	-18
Extraordinary expenses ^a	76,130.00	21,289,671.79	...
Ordinary budget expenditures	74,619,681.68	69,658,931.43	+7
Total budget expenditures (estimated in budget)	76,102,487.00	69,561,754.00	+9
Total budget surplus (including continuing assets, advances to money-order fund, and unexpended appropriations)	\$35,591,566.39	32,209,719.39	+10
Net cash balance unappropriated	12,320,454.50	12,582,479.30	-2

^a Decrease mainly due to fall of import duties on rice.

^b Includes extraordinary expenditures for rehabilitation of sinking funds and Philippine National Bank and creation of loan fund under Act 3335.

^c Includes P23,271,111.89 of "continuing assets," "advances to money-order fund," and "balances of outstanding appropriations," leaving an unappropriated cash surplus on Dec. 31, 1927, of P12,320,454.50 as against P12,582,479.30 on Dec. 31, 1926.

COMMUNICATIONS. Most of the foreign shipping is done through the port of Manila, although some of the smaller ports have direct communication with foreign countries. During the calendar year 1927, 1095 vessels of 4,150,152 tons entered the ports of the islands in the foreign trade and 1093 vessels of 4,133,611 tons cleared. In the coastwise trade, 21,125 vessels of 2,802,042 tons entered and 21,317 vessels of 2,739,532 tons cleared.

The railroads of the Philippine Islands are owned and operated by private companies, the Manila Railroad Co. and the Philippine Railway Co. The Manila Railroad Co. operates the railways in the island of Luzon, comprising 1161 kilometers of 3-foot 6-inch gauge track, of which 659 kilometers are main line, 402 kilometers are branch line, and 100 kilometers are sidings. Operating revenues during 1927 amounted to \$6,519,270, as compared with \$6,326,200 in 1926, and operating expenses were \$3,806,966 as compared with \$3,847,131. The motive power and rolling stock in operation at the close of 1927 consisted of 152 locomotives, 1837 freight cars, and 194 passenger coaches. During the year six locomotives, 160 freight cars, and seven passenger coaches were purchased.

The Philippine Railway Co. operates the railways in the islands of Panay and Cebu. This comprises 212 kilometers of 3-ft. 6-in. track, all of which is main line. Operating revenues in 1927 amounted to \$681,543, and operating expenses to \$495,375, as compared with \$666,643 and \$511,208, respectively, in 1926. During the year, construction work was in progress on two kilometers of track in the city of Iloilo, in addition to a new station and grounds. This work

cost \$125,000, and the track was opened to traffic on Apr. 1, 1928. At the close of 1927 there were in operation 16 locomotives, 231 freight cars, and 54 passenger cars; five cane cars were purchased during the year.

GOVERNMENT. Executive power is in the hands of a governor-general appointed by the President of the United States, by and with the advice and consent of the Senate; and in six departmental secretaries, all of whom are Filipinos, with the exception of the vice governor (appointed in the same manner as the governor-general), who acts as secretary of public instruction. Legislative power is in a senate of 24 members and a house of representatives of 93 members, all of whom are elected by popular vote, with the exception of nine representatives and two senators appointed by the governor-general to represent certain provinces. A council of state, com-

posed of the governor-general as president, the presidents of both branches of the legislature, and the departmental secretaries, constitutes the link between the administrative and legislative departments. Governor-general in 1928, Henry L. Stimson.

HISTORY. The Philippine Islands passed a year of comparative quiet under the intelligent rule of Governor Stimson. He seemed to have made the Filipinos realize that no matter how they felt on the question of independence, they would of necessity have to exploit their economic resources whether under the American flag or their own. It was felt in many quarters that the bitter-enders among the independence groups were outmaneuvered by Mr. Stimson in his diplomatic handling of domestic problems and his apparent sympathy for the wishes and aims of the general mass of the people. One illustration of the gradual calming of the radical group in the eyes of the people was the defeat of the party favoring immediate independence in the municipal elections held in June. The successful party, the Nationalist, favored ultimate independence but believed in coöperation at that time.

On November 23 and 24, the islands were visited by a terrific typhoon, which seriously damaged crops and congested transportation. Estimates at the close of the year placed the value of crops and property permanently destroyed at about \$25,000,000 and the agricultural loss for the next two years at the same figure. Serious shortage of food at the time of the typhoon was avoided by the distribution of seeds of quickly growing food crops and immediate livelihood was provided the sufferers by employment in public-works construction.

PHILLIPS UNIVERSITY. A coeducational institution of higher learning, at University Station, Enid, Okla., founded in 1907. The student enrollment for 1927-28 in all departments was 879, and the limited freshman admission was 270. The faculty numbered 39. The productive endowment amounted to \$548,830. The library contained 16,537 volumes, exclusive of public documents. President, Isaac Newton McCash, A.M., D.D., LL.D.

PHILOLOGY, CLASSICAL. The best way to gain a fair conception of the more important contributions to classical philology is to examine lists of articles and books, or abstracts of them, or both, given in certain periodicals—*American Historical Review*, *The American Journal of Philology*, *The Classical Journal*, *The Classical Quarterly*, *The Classical Review*, *The Classical Weekly*, *Historical Outlook*, *Athenæum* (published at Pavia, Italy), *Bulletin Bibliographique et Pédagogique du Musée Belge* (a companion to *Le Musée Belge*, *Revue de Philologie Classique*), *Philologische Wochenschrift*, *Gnomon*, and *Revue de Philologie*. The reviews, too, in these periodicals are very helpful. Especially valuable is *Bibliotheca Philologica Classica*, *Beiblatt zum Jahresbericht über die Fortschritte der Klassischen Altertumswissenschaft*, whose aim is to cover all publications, both articles and books (except such as are definitely pedagogical in character), in the whole field of classical philology. No attempt is made, however, to indicate the relative value of items listed. Volumes 53 and 54, covering 1926 and 1927, contained respectively 4780 and 3821 items. Very valuable in these volumes is the "Namenverzeichnis," of 74 pages and 58 pages, which gives in alphabetical order the names of the scholars whose articles or books are named in the body of the work, with references back to the numbered items which describe articles or books.

The Year's Work in Classical Studies, published in England, lists material that appears between July 1 and June 30, under such captions as "Greek Literature," "Latin Literature," "Greek History," "Roman History," "Greek and Roman Religion," "Ancient Philology," "Greek Archaeology and Excavation," "Italian Archaeology and Excavation," "Papyri," and "Roman Britain."

The Association Guillaume Budé, in Paris, published *Dix Années de Bibliographie Classique: Bibliographie Critique et Analytique de l'Antiquité Gréco-Latine pour la Période 1914-1924: Deuxième Partie, Matières et Disciplines*. In this part the matters covered by classical philology are arranged in groups (e.g. literature, philology and linguistics, antiquities, history, law, philosophy); the books or articles dealing with those subjects are arranged by the names of the authors of the books or the articles. The "Index des Noms D'Auteurs" covers 41 pages, four columns to the page. In many instances there is a brief outline of the contents of book or article. A further valuable feature is the inclusion of references to reviews of articles or books.

To the *Loeb Classical Library* (see YEAR BOOKS, 1911-1927) additions were made, on the Greek side, of versions of Athenæus, *The Deipnosophists* (the second of seven volumes), C. B. Gulick; Epictetus (the second and last volume), W. A. Oldfather; Isocrates (the first of three volumes), G. Norlin; Josephus (the third of eight

volumes covering *The Jewish Wars*, Books IV-VII), H. St. J. Thackeray; Plutarch, *Moralia* (second of fourteen volumes), F. C. Babbitt; Procopius, *History of the Wars* (fifth of seven volumes), H. B. Dewing; Oppian, Colluthus, and Tryphiodorus, A. W. Mair; St. Basil (second of four volumes), R. J. Deferrari; Strabo, *Geography* (fifth of eight volumes), H. L. Jones. On the Latin side translations were added of Cicero, *De Re Publica* and *De Legibus* (in one volume), C. W. Keyes; Cicero, *Letters to His Friends* (second of three volumes), W. G. Williams; Cicero, *Verrine Orations* (first of two volumes), L. H. G. Greenwood; Aulus Gellius (third and last volume), J. C. Rolfe; Lucan, J. D. Duff; Seneca, *Moral Essays* (first of three volumes), J. W. Basore; Statius, complete (two volumes), J. H. Mozley. On the *Loeb Classical Library*, see *The Classical Weekly*, vol. xxi, pp. 1-3, 9-11, 17-19, 25-27.

The first complete translation of the *Chronicle*, or *History of the Two Cities*, of Bishop Otto of Freising appeared. It is the work of an American scholar, C. C. Mierow. Thus for the first time this important work is accessible to those who are not masters of Latin.

The great *Lexicon Plautinum*, by G. Lodge, was advanced by the publication of vol. ii, part iv. Thirteen hundred pages of this monumental work have appeared; it is gratifying to know that the manuscript of the remaining 480 pages is ready. This work is the most extensive undertaking that any American classical scholar has thus far, single-handed, essayed and accomplished.

In *The American Journal of Philology*, xlix, appeared "A Study in the Commercial Relations between Egypt and Syria in the Third Century Before Christ," G. McL. Harper, Jr.; "Greek Fish-Names, Part II, Part III," F. A. Wood; "The First Idyl of Moschus in Imitations to the Year 1800," J. Hutton; "The Deification of Demetrius Poliorcetes," K. Scott; "Lucilian Genealogy," A. B. West; "Three Notes on Juvenal," H. C. Nutting; "Juvenaliana," L. G. Pockock.

From *Classical Philology*, xxiii, may be mentioned "The Archetype of the Roman Agrimensores" (a more accurate title would be "The Archetype of the Corpus Agrimensorum Romanorum"), C. H. Beeson; "Administration of Justice in Rural Attica," R. J. Bonner; "The Petition of a State Farmer in Roman Egypt," C. W. Keyes; "The Administration of Justice in the Second Athenian Confederacy," H. G. Robertson; "Studies in Greek Noun-formation," G. R. Vowles; "The First Satire of Persius," G. L. Hendrickson; "Leukas-Samé," A. Shewan (the author challenges the argument of F. Brewster that the island of Leukas is the Homeric Samé. Mr. Brewster is, however, supported by A. D. Fraser: see below in this paragraph); "Tibullus in the Mediæval Florilegia," B. L. Ullman; "Homer's Ithaca and the Adjacent Islands," A. D. Fraser (the author concludes that Dulichium is Corfu, Samé is Leukas, Ithaca is Cephalonia, Zacynthus is Zante, Asteris is Thiaki); "Herodotus and Athens," J. Wells; "The Third Satire of Persius," G. L. Hendrickson; "Recent Interpretations of the *Timæus* (of Plato)," P. Shorey; "Another 1508 Aldine Pliny (the younger)," B. L. Ullman; "The Newly Discovered Cyrenaean Inscription and the Alleged *Imperium Majus Proconsulare* of Augustus," D. McFayden.

In *The Classical Journal*, xxiii, xxiv, appeared "Apophoreta," S. L. Mohler; "Phonetic Laws," E. H. Sturtevant; "The *Ab Urbe Condita* Type of Expression in Greek and English," E. Adelaide Hahn; "Crime and Criminals in Aristophanes," L. Van Hook; "Cicero: A Sketch," W. A. Oldfather; "Homeric Laughter," J. W. Hewitt; "Tiberius and the Development of the Early Empire," F. B. Marsh; "Vergil's Motivation of the *Aeneid*," F. J. Miller; "Some Survivals of Magic in Roman Religion," E. E. Burriss; "The Conquests of the Latin Language," R. G. Kent.

The Classical Weekly, xxi, xxii, contained the following articles: "Scholarship," C. Knapp; "The Classical Invasion of English Literature," H. A. Watt; "Aristotle's Lost Chapter on Comedy," K. K. Smith (a searching review of a book by L. Cooper, entitled *An Aristotelian Theory of Comedy*); "Caesar, De Bello Gallico 7.45-52. The Attack at Gergovia: A Case of the 'Limited Objective,'" L. Mac Veagh; "The Sortes Vergilianae," Helen L. Loane; "Cicero, In Catilinam 1.15: On the Translation of Declinatione, Et Ut Aiunt, Corpore," E. S. McCartney, C. Knapp, C. M. Knapp; "Roman Commerce in the Early Empire," E. W. Bowen; "Linguistic Science and Classical Philology," E. H. Sturtevant and R. G. Kent; "Centurio Romanus—'A First-Class Fightin' Man,'" C. S. Smith; "Greek and Roman Weather Lore of the Sun and the Moon," E. S. McCartney; "Latin in Colonial Virginia," Martha W. Hiden; "Some Remarks on Cicero as a Student," C. Knapp; "Is There an *Africitas*?", Sister Wilfrid.

In *Transactions and Proceedings of the American Philological Association*, lviii, which contained the papers read before the association at its meeting of December, 1927, the following articles appeared: "Cicero's Treatment of the Free Will Problem," Margaret Y. Henry; "The Insanity of the Hero—An Intrinsic Detail of the Orestes Vendetta," Florence M. B. Anderson; "The Volscians in Vergil's *Aeneid*," Catharine Saunders; "Aristotle and the Voluntary," T. Means; "Alexander's Horns," A. R. Anderson; "A Weaver of Oxyrhynchus—A Sketch of an Humble Life in Roman Egypt," Ethel H. Brewster; "Ancient Forests and Navies," A. C. Johnson; "The Language of the Greek Inscriptions from the Jewish Catacombs of Rome," H. J. Leon; "The Nomarch Nicanor," C. J. Kraemer, Jr.

From the *Philological Quarterly*, vii, we may mention "The Originality of Terence," R. C. Flickinger; "Longinus on the Sublime. Some Historical and Literary Problems," W. Rhys Roberts; "Ovid's *Carmina Furtiva*," R. S. Radford.

In England the more accessible repositories of the results of classical study are *The Year's Work in Classical Studies* (see the second paragraph of this article), *The Classical Quarterly*, and *The Classical Review*. The articles in *The Classical Review* are very numerous, and are in consequence very short. From *The Classical Quarterly* we mention the following: "Prosody and Method, II," A. E. Housman; "The Vatican Plato," L. A. Post; "'Imitation' in Plato's *Republic*," J. Tate; "Horace and the Moral Function of Poetry," J. Tate; "The *Equites Illustres*," H. Hill; "The *Periplus Maris Erythraei*," M. P. Charlesworth; "The *Parmenides* of Plato and the Origin of the Neoplatonic 'One,'" E. R. Dodds; "The Seventh and Eighth Platonic Epistles," J. Harward (the author regards these letters as the work of Plato).

Mention, however brief, must be made of two other periodicals published in the United States. One is *Language*, the organ of the Linguistic Society of America, the other *Speculum*, published by The Medieval Academy of America.

There remains space enough to mention only a few of the important books that have come to the writer's attention. Since it is, in general, clear from its title to which field of classical philology each book belongs, the books are listed in the alphabetical order of their authors' names. In a few instances a needed word of comment is added: C. Bailey, *The Greek Atomists and Epicurus*; R. H. Barrow, *Slavery in the Roman Empire*; H. J. Bayles, *Minucius Felix and his Place Among the Early Fathers of the Latin Church*; E. Bevan, *A History of Egypt Under the Ptolemaic Dynasty*; C. W. Blegen, *Zygouries: A Prehistoric Settlement in the Valley of Cleonae*; G. S. Brett, *Psychology, Ancient and Modern*; R. Briffault, *The Mothers, A Study of the Origin of Sentiments and Institutions* (3 volumes); C. D. Buck, *Introduction to the Study of the Greek Dialects* (revised ed.); M. D. Bundy, *The Theory of Imagination in Classical and Medieval Thought* (published in *University of Illinois Studies in Language and Literature*, vol. xii); J. Burnet, *Platonism*; G. M. Calhoun and Catherine Delamere, *A Working Bibliography of Greek Law; The Cambridge Ancient History*, Second Volume of Plates; P. R. Coleman-Norton, *Palladii Dialogus de Vita S. Joannis Chrysostom*, edited; R. S. Conway, *Harvard Lectures on the Vergilian Age*; L. Cooper, *A Concordance to Boethius*; L. Cooper and A. Gudeman, *A Bibliography of the Poetics of Aristotle*; N. Douglas, *Birds and Beasts of the Greek Anthology*; W. C. Edward, *The Suasoriae of Seneca the Elder* (translated and explained); T. Frank, *Catullus and Horace*;

M. N. Gillies, *The Argonautica of Apollonius Rhodius*, Book iii, edited; J. Harward, *The Epinomis of Plato*, edited and translated; T. R. Holmes, *The Architect of the Roman Empire* (Julius Caesar); J. Krohmayer and G. Veith, *Heerwesen und Kriegführung der Griechen und Römer*; R. W. Livingstone, *The Mission of Greece: Some Greek Views of Life in the Roman World*; H. Mattingly, *Roman Coins from the Earliest Times to the Fall of the Western Empire*; B. D. Meritt, *The Athenian Calendar in the Fifth Century* (this work is based on a study of the detailed accounts of money borrowed by the Athenian State); G. Murray, *The Classical Tradition in Poetry*; W. Nestle, *Eduard Zellers Grundriss der Geschichte der Griechischen Philosophie*, 13th ed.; H. N. D. Parker, *The Roman Legions*; V. Pärvan, *Dacia: An Outline of the Early Civilizations of the Carpatho-Danubian Countries* (this work bears on early Greek or pre-Greek civilization); Pauly-Wissowa, *Real-Encyclopädie der Classischen Altertumswissenschaft*, vol. xiv, part i (this part contains the articles "Lysimachus" to "Mantike"); C. W. Previté-Orton, *The Defensor Pacis of Marsilius of Padua*, edited;

E. K. Rand, *The Founders of the Middle Ages*; D. Randall-MacIver, *The Iron Age in Italy, A Study of Those Aspects of the Early Civilization which are Neither Villanovan nor Etruscan* (1927); W. Rhys Roberts, *Greek Rhetoric and Literary Criticism*; H. J. Rose, *A Handbook of Greek Mythology Including its Extension to Rome*; M. Rostovtzeff, *Mystic Italy* (a study of

the archæological evidence regarding the Greek mystery religions of the first three centuries A. D. in Rome and Pompeii); M. Schanz, *Geschichte der Römischen Literatur*, 4th ed., by C. Hosius: Erster Teil, "Die Römische Literatur in der Zeit der Republik"; R. Scoon, *Greek Philosophy Before Plato*; Stolz-Schmalz, *Latcinische Grammatik*, 5th ed., by M. Leumann and J. H. Hofmann, Zweite Lieferung, covering "Syntax und Stilistik"; D. R. Stuart, *Epochs of Greek and Roman Biography*; Dorothy Tarrant, *The Hippias Major Attributed to Plato, with Introductory Essay and Commentary*; A. E. Taylor, *A Commentary on Plato's Timæus* (a very elaborate work, by an English scholar, much praised by English reviewers, praised and condemned both by P. Shorey, in *Classical Philology*, xxiii); *Thesaurus Linguae Latine*, volume v, Fasciculus VIII, containing the articles *I. do to dolor*; A. Thumb, *Grammatik der Neugriechischen Volkssprache*, 2d ed., by J. E. Kalitsunakis; E. H. Warmington, *The Commerce Between the Roman Empire and India*.

PHILOLOGY, MODERN. The Glozel controversy which had been raging in France for two years and in which leading anthropologists, archæologists, and philologists had taken so active a part, resolved itself into an anti-climax of a somewhat ridiculous character. The French Government, having been called upon by participants on both sides of the famous quarrel, appointed M. Bayle of the Judiciary Police to make a thorough examination. Though making no pretensions to a knowledge of either anthropology or archæology, M. Bayle turned out to be an excellent detective. He selected ten objects at random from the Glozel Museum, near Vichy, and soon revealed overwhelming evidence of modern manufacture. Thus, inscriptions were shown to have been made with modern steel instruments; bone implements were found to contain gelatinous matter in the marrow; pieces of thread embedded in the pottery were colored with modern aniline dyes; a bit of grass found in a piece of earthenware had its cells intact, etc. Thus Glozel becomes a hoax and ranks among the most famous in history.

Nevertheless, this controversy had certain positive aspects. In the first place it served as a warning to scholars not to be too prone to accept so-called archæological discoveries at their face value. Every possible evidence of authenticity should be adduced before pronouncing an opinion. The writer of these lines recalls having, in his boyhood, perpetrated a hoax of a similar nature on a well-known Indian archæologist and museum director in order to prove that his theory of the manner in which arrow-points were made was not a correct one. Secondly, the extraordinary international publicity attracted to the controversy aroused more than anyone could have foreseen the interest of the reading public in anthropological and archæological investigations. It is said, e.g., that one archæological society received more than \$100,000 in unsolicited donations as a consequence of the interest shown in the discoveries made in Egypt some two or three years ago. It is unnecessary, therefore, for scholars to bewail the outcome of the Glozel fiasco.

The apparent gullibility of those great scholars, whose authority had never been questioned heretofore, may be condoned to a certain extent in view of the unusual multiplicity of discoveries made in recent years. So great is our interest in

the origins and history of prehistoric man that literally hundreds of surveys and excavations are being made in every part of the world. A few years ago, Camille Jullian, a leading archæologist of France—and who, incidentally, did not question the authenticity of the Glozel finds—informed the writer that almost before an article on the subject had gone through the process of printing, it was out of date. We should, therefore, not be astonished at reversions of opinions by scholars, so far-reaching as to appear at times catastrophic. In fact, newspapers and scientific journals have been filled during the past few years with new evaluations of evidence by Sir Arthur Keith, Henry Fairfield Osborn, Franz Boas, Ales Hrdlicka, Prof. D. M. S. Watson, and many others.

In a cable to the *New York Times*, dated August 17, Roy Chapman Andrews announced that though the hoped-for discoveries of the pre-dawn man were not made, entirely new light was thrown by his findings on the old and the new Stone Age. "Though many implements that we gathered," he writes, "date back 150,000 years, the most interesting finds show that 20,000 years ago Mongolia was much more densely populated than now by dune dwellers, who, when saturation was reached, probably spread into China and into Siberia, and thence to Alaska and also to Europe." And on July 3, Harold McCracken, leader of the so-called Morrissey party, announced that he had discovered on an Aleutian island, off the coast of Alaska, four mummies of Stone Age men. Other discoveries of scarcely less importance were announced as having been made in New Mexico and Australia.

While our unfortunate experience with Glozel may incline us to be skeptical regarding the validity of these discoveries, there was no doubt that some of them will tend to render unstable many of the "pet" theories of anthropologists, archæologists, and philologists.

Until recent years each one of these three groups of scientists seemed to resent any co-operation from the others in solving its special problems. The anthropologist felt that the origin of prehistoric man was his own special field of study, not to be encroached upon by anyone else; to the archæologist the study of the culture of prehistoric man was confined solely to his domain of research; whereas the philologist attempted to preëempt as his own all that pertained to language, its origin and history. When evidence was contradictory or lacking, free play was given to the imagination. Consequently, many beautiful theories evolved in the past are doomed, if not to utter destruction, at least to considerable modification.

For the convenience of the reader, a few of the more important summaries of investigations may be mentioned: Franz Boas, *Anthropology and Modern Life* (N. Y.) *, a popular presentation; Sir Arthur Keith, *Concerning Man's Origin* (ib.); Keith Henderson, *Prehistoric Man* (ib.); R. S. Lull, *Ancient Man* (ib.); H. F. Cleland, *Our Prehistoric Ancestors* (ib.); Mary E. Boyle, *In Search of Our Ancestors* (Boston), being an attempt to retrace man's origin and development from later ages back to their beginnings; D. Randall-MacIver, *The Iron Age in Italy* (N. Y.), a study of those aspects of that early civilization which are neither Villanovan nor

* When no date is given it means that the work was published in 1928.

Etruscan; the same author's *The Etruscans* (ib.), an attempt to show that this ancient people of Italy came from Asia Minor about 800 B.C., bringing with them a well-developed culture; Vasile Parvan, *Dacia* (ib.), an outline of the early civilization of the Carpatho-Danubian countries; C. Dawson, *The Age of the Gods* (Boston), a popular presentation of the origins of culture in prehistoric Europe and the East; and F. S. Chapin, *Cultural Change* (N. Y.), an account of man's cultural development from ancient times to the present.

G. Elliott Smith, B. Malinowsky, H. J. Spinden, and A. Goldenweiser, *Culture: The Diffusion Controversy* (ib.), represents an attempt to present the opposing theories of anthropologists and archaeologists, raging furiously among them, as to whether culture began indigenously among different races in different parts of the world, or whether it drew its sources from one single race in one land and thence spread to other continents and peoples. The work reveals two marked traits, not to be expected from scholars of such high standing. In the first place, what high-sounding theories can be built upon the flimsiest evidence, and, secondly, what extraordinary bitterness characterizes the arguments of each of the various adversaries. The first impression the reader gets is that Molière's portrayal, in *The Bourgeois Gentilhomme*, of the philosopher, the teacher of singing, and the dancing master, may also be applied to modern anthropologists. See ANTHROPOLOGY.

Sir Richard Paget, the phonetician, evolved, in an address before the British Association for the Advancement of Science at Glasgow on September 6, a new theory for the origin of language. This time he resorts to mouth gestures—which he labels pantomimic action—as the primitive means of conveyance of symbolized ideas. This theory goes back to Charles Darwin, who observed that persons cutting with a pair of scissors often moved their jaws sympathetically. "Primitive man would sing, grunt, or roar to express emotions just as the animals did," according to Sir Richard. "He would pantomime with his face and limbs to express his ideas to his fellows, and, as he pantomimed with his hands, his tongue would follow suit. But, as he came to occupy his hands more and more in his crafts, he would have to rely more on gestures of the face, tongue, and lips. Then it would come about that pantomime action would be recognized by sound as well as sight. Thus speech was born." A very attractive explanation at first sight, but which seems to recall in many ways Max Müller's pet hobby, once jocularly known as the Je-Hai-Ho theory of the origin of language.

ARCHAEOLOGY. This field is represented in K. S. Sandford, *First Report of the Prehistoric Survey Expedition* (Chicago), containing an account of some Egyptian discoveries; Bertha Porter and Rosalind L. B. Moss, *Typographical Bibliography of Ancient Egyptian Hieroglyphic Texts, Reliefs, and Paintings* (N. Y.), of which the first volume is devoted to the Theban Necropolis; W. Woringer, *Egyptian Art* (ib.), translated from the German with an introduction by B. Rackham; James Baikie, *The Glamour of Near East Excavation* (Phila.), a recital of the feverish search for the buried art, wisdom, and history of the ancient East, from the Nile to Babylon; M. G. Kyle, *Explorations at Sodom* (N. Y.); Ivar H. N. Evans, *Papers on the Ethnology and Archaeol-*

ogy of the Malay Peninsula (ib.); and G. S. Duncan, *Introduction to Biblical Archaeology* (ib.), a textbook.

SOUTH AFRICA. Contributions to the language, customs and folklore of the tribes of this region include M. C. Burkitt, *South Africa's Past in Stone and Paint* (N. Y.), being studies in archaeology; C. G. Botna, *Place Names in the Cape Province* (Cape Town); C. Bullock, *The Mashona* (ib.), a study of the natives of Southern Rhodesia; W. C. Willoughby, *The Soul of the Bantu* (N. Y.), containing research into the customs of these tribes; C. G. Botha, *Social Life in the Cape Colony in the 18th Century* (Cape Town), a brief survey; and Blaise Cendrars, *The African Saga* (N. Y.), a translation of a French collection of stories, dealing with the folklore of twenty or more African tribes, speaking widely different tongues.

CHINA AND JAPAN. The prolonged revolution in China, accompanied by an unusual awakening of ideas, as well as the progress of culture in Japan, were claiming more and more the attention of the Occident. Investigations into the past history of these countries have, therefore, a strong appeal for the reading public. Among the noteworthy contributions of the year are J. C. Ferguson and M. Anesaki, *Chinese-Japanese Mythology* (Boston), a new volume in the series entitled *The Mythology of All Races*; Huc and Gabet, *Travels in Tartary, Thibet, and China* (2 vols., N. Y.), translated by W. Hazlitt and edited, with an introduction, by Paul Pelliot of the Collège de France; Chi Li, *The Formation of the Chinese People* (Cambridge, Mass.), an anthropological study; H. F. Rudd, *Chinese Social Origins* (Chicago), an inquiry into the period before Confucius; E. T. Williams, *A Short History of China* (N. Y.), from the earliest times to the present day; Ezra Pound, *Ta Hio: The Great Learning* (Seattle, Wash.), consisting of selections from the Confucian classics; J. S. Burgess, *The Guilds of Peking* (N. Y.), recounting their history in ancient China; R. L. Hobson, *Chinese Art* (ib.), a scholarly outline by the Keeper of the Department of Ceramics and Ethnography at the British Museum; Louise W. Hackney, *Guide-Posts to Chinese Painting*, an inferior work though announced as having been edited by Paul Pelliot, a leading authority on the subject; and V. Dyson, *Forgotten Tales of Ancient China* (Shanghai), a translation into English of a large collection of legends, etc.

G. B. Sansom, *Historical Grammar of Japanese* (N. Y.), contains the history of grammatical forms and common idioms. Other works include J. I. Bryan, *Civilization of Japan* (N. Y.); the same author's *The Journal of Kenko* (Seattle, Wash.), consisting of meditations of a mediæval Japanese philosopher; *Poetry of the Orient* (N. Y.), an anthology edited by Eunice Tietjens; and J. L. French, *Lotus and Chrysanthemum* (N. Y.), an anthology of Chinese and Japanese poetry.

F. A. Ogg, *Research in the Humanistic and Social Sciences* (N. Y.) consists of the report of a survey made for the American Council of Learned Societies. John Percival Postgate, 1853-1926 (ib.), a pamphlet issued by the British Academy, contains a study of the extensive contributions of the well-known British philologist.

INDO-IRANIAN. Studies in this field suffered a severe loss last year in the death of Maurice Bloomfield, the famous pioneer philologist of Johns Hopkins University. One of the most valu-

able contributions of the year is *Zoroastrian Studies* (N. Y.), by A. V. Williams Jackson, the distinguished professor of Columbia University. The work consists of a collection of studies on Iranian religion and kindred topics. Other contributions to the same field of research include C. E. Pavry, *Iranian Studies* (Bombay, 1927), also dealing with ancient Persia; *A Persian Anthology* (N. Y., 1927), consisting of translations by E. G. Browne, edited by E. D. Ross, with an introductory memoir of the translator by J. B. Atkins; P. Salet, *Omar Khayyam* (Paris), a French study on the famous Persian author; Edw. Fitz-Gerald, *The Rubaiyat of Omar Khayyam* (London), a new edition of the well-known translation, with illustrations in color by C. Robinson; and *The Poems of Nizami* (London), described by L. Binyon, and containing reproductions in color of the paintings and ornamentations in this sixteenth-century Persian manuscript.

Turning to India, we note, first of all, E. W. Hopkins, *Legends of India* (New Haven, Conn.), consisting of reinterpretations in verse of old Hindu tales; P. D. Shastri, *Essentials of Eastern Philosophy* (N. Y.), being two addresses delivered at the University of Toronto during the Philosophical Conference of 1922; J. B. Pratt, *The Pilgrimage of Buddhism* (ib.), in which the author attempts to supply a sense of Buddhism as a whole and an understanding of the philosophy as it is lived today; J. E. Ellam, *The Religion of Tibet* (ib.), an interpretation of Buddhism as practiced in that country; M. G. Mori, *Buddhism and Faith* (Tokyo, Japan), a study of the religion as practiced by the Japanese; J. F. C. Fuller, *Yoga* (Phila.), a discussion of the mystical aspect of Brahminism and Buddhism; J. E. Abbott, *Bhikshugita, or the Mendicant's Song* (Summit, N. J.), being a translation of the twenty-third chapter of the Eknathi Bhagavata; H. R. Trevaskis, *The Land of the Five Rivers* (N. Y.), an economic history of the Punjab from the earliest times down to 1890; and E. T. Thompson, *Suttee* (Boston), described as a historical and philosophical inquiry into the Hindue rite of widow-burning.

RELIGION. A few general works of importance to the philologist may be noted: M. J. Herzberg, *Myths and Their Meaning* (N. Y.), an introduction to Greek, Roman, and Celtic mythology, intended for high-school students; E. Schure, *From Sphinx to Christ* (Phila.), a translation from the French of an outline of the evolution of religion; F. E. Williams, *Orokawa Magic* (N. Y.), a study of a primitive religious movement; *Some Authentic Acts of the Early Martyrs* (ib.), translated by E. C. E. Owne from the lives of the Saints; and G. G. Coulton, *Five Centuries of Religion* (vol. 2, London), dealing with "The Friars and the Dead Weight of Tradition, 1200-1400. A.D."

MIDDLE AGES. Among general works dealing with this vast period, mention should at once be made of Prof. Charles S. Baldwin's new volume in his comprehensive series on the history of *Rhetoric: Medieval Rhetoric and Poetic* (to 1500; N. Y.). This most welcome work reveals further the extensive scholarly equipment of the author. Other contributions include R. Guette, *La Légende de la Sacristine* (Paris), a study in comparative literature; M. Heepe, *Lautzeichen und Ihre Anwendung in Verschiedenen Sprachgebieten* (Berlin); E. K. Rand, *Founders of the*

Middle Ages (Cambridge, Mass.), a study of the cultural achievements of the Middle Ages; E. B. Osborn, *The Middle Ages* (N. Y.), discussing the mediæval mind, the Christian commonwealth, organization of society with special reference to the status of women and kindred topics; a new edition of the first volume of G. G. Coulton's *Life in the Middle Ages* (ib.), devoted to "Religion, Folklore, and Superstition"; J. W. Thompson, *Economic and Social History of the Middle Ages* (ib.); the fifth volume of Sir R. W. and A. J. Carlyle's *History of Medieval Political Theory in the West* (ib.), which treats of the political theory of the thirteenth century; H. R. Patch, *The Goddess Fortuna in Medieval Literature* (Cambridge, Mass., 1927), a scholarly investigation into the vast influence of a subject that engrossed the attention of many mediæval writers; W. R. Newbold, *The Cipher of Roger Bacon* (Phila.), a study of the Voynich manuscript by the late professor of philosophy in the University of Pennsylvania; *The Opus Majus of Roger Bacon* (2 vols., Phila.), a new translation by R. B. Burke; P. S. Allen, and H. M. Jones, *The Romanesque Lyric* (Chapel Hill, N. C.), consisting of studies in its background and development from Petronius to the Cambridge Songs (50-1050 A.D.); *Contemporaries of Marco Polo* (N. Y.), edited by M. Komroff, consisting of the travel records in the East of William of Rubruck (1253-55), John Pian de Carpini (1245-47), Friar Odoric (1318-30), and Rabbi Benjamin of Tudela (1160-73); and Merriam Sherwood and E. Mantz, *The Road to Cathay* (ib.), a work also dealing with mediæval travelers.

The Renaissance and the Reformation are studied in the following works: R. Ehrenberg, *Capital and Finance in the Age of the Renaissance* (ib.), translated from the German by H. M. Lucas; J. W. Allen, *History of Political Thought in the Sixteenth Century* (ib.), with special reference to Germany, Switzerland, England, France, and Italy; G. G. Coulton, *Art and the Reformation* (ib.), an historical study; Hilaire Belloc, *How the Reformation Happened* (ib.); and H. Boehmer, *The Jesuits* (Phila.), a historical study of the famous order.

CELTIC. Standish Hayes O'Grady, well-known Irish scholar, died on May 18, in his eighty-second year. He was regarded by many as the originator of the so-called Celtic Renaissance, which, according to Matthew Arnold, introduced into English literature of the nineteenth century "its turn for style, its style for melancholy, and its turn for natural magic." His chief works are *History of Ireland, The Story of Ireland, The Coming of Cuchulainn, The Flight of the Eagle, Ulrick the Ready, The Heroic Period*, a romantic trilogy, and *The Chain of Gold*.

In Irish, two important contributions of Roland M. Smith deserve mention: "The Alphabet of Cuigne Mac Eoin," published in the *Zeitschrift für Celtische Philologie* (xvii, 45-72), and "The Speculum Principium in Early Irish Literature," in *Speculum* (ii, 411-455). E. Parkinson, *The City of Downe* (Belfast), supplies a history of Downpatrick, Ireland. Stephen Gwynn's *Ireland* (N. Y.) describes the beautiful and historical spots of that country. Other works include Pauline Henley, *Spenser in Ireland* (N. Y.), consisting of a study of the Irish environment of the English poet, Edmund Spenser, as considered in its historical aspects; J. C.

Molony, *The Riddle of the Irish* (N. Y.), containing chapters on the early and later history of Ireland, an interesting comparison between Ireland and India, and other topics; and Dr. Crone, *Concise Dictionary of Irish Biography* (N. Y.).

On August 24, the North American Manx Association was organized at Cleveland, Ohio, with the following officers: Honorary President, A. B. Crookall of Douglas, Isle of Man; Honorary Vice President, Richard Cain of Douglas; President, J. E. Christian of Cleveland; and First Vice President, Dr. John Moore of Chicago. As this appears to be the first Manx society ever formed outside the Isle of Man, its work should prove most interesting.

The American Iona Society continued during the year under the able leadership of President Richard M. Montgomery, of New York, its active campaign for funds to be devoted to the erection of a centre of Gaelic culture in Scotland. Publications of interest include L. C. Wimberly, *Folklore in the English and Scottish Ballads* (Chicago), a study in literary history; *Old Scotch Songs and Poems* (N. Y.), phonetically spelt and edited by Sir James Wilson; Isabel Cameron, *A Highland Chapbook* (Stirling), containing valuable Celtic folklore; and D. Coghill, *The Elusive Gael* (Stirling), a study of Highland Scottish character.

A. K. H. Jenkin, *The Cornish Miner* (London) relates his history from pre-Roman times down to the present day.

During the summer the National Library of Cardiff, Wales, had on exhibition a collection of the Laws of Howel Dda which were codified during the reign of this King in the early part of the tenth century. The oldest extant manuscript on exhibition was in Latin and dated from A.D. 1175-1200. On the other hand, the most ancient Welsh manuscript—in which language the laws were first composed—which the Library had on display, dated from about A.D. 1200 and is known as the *Llyvyr Du*, or the *Black Book of Chirk*.

W. B. Johnson, *Folk Tales of Brittany* (N. Y.) consists of a collection of interesting myths, most of which are still current among the Bretons of Northern France.

SLAVIC. A curious example of the confusion of tongues—a form of Anglicized Slavic—is brought to public attention in a word-list published in *The Interpreter* (N. Y.). Most readers are doubtless aware of the fact that the Italians of this country have even developed a literature in a form of Anglo-Italian, many words of which have crept into the Italian literature at home, e.g., the poetry of Giovanni Pascoli. Now the Slavs and other immigrants hailing from eastern Europe are attempting to solve the same problem in a somewhat similar manner; i.e., adding a native suffix to the English word. Thus, "fine shoes" become "sapogi" or "buty" to the Poles, Russians, Ukrainians, Solvaks, and Jugo-Slavs, while our "floor," being so different from their own, becomes "flor"; "store" becomes "shtor"; to "move," unknown in their country, becomes to the Hungarian "muffolni"; to the Lithuanian "issimufyt," and to the Russian "mufuyet do khauzu."

The following works may be mentioned: C. J. C. Street, *Slovakia, Past and Present* (Westminster, Eng.), a brief history of the country; Lucia M. Borski and Kate B. Miller, *The Tailor and Other Fairy Tales* (N. Y.), translated from the Polish; and J. Gregor and R. Fulop-Miller,

Das Russische Theater (Vienna), containing an account of the nature and history of the Russian theatrical movement.

ENGLISH. As indicated in the YEAR BOOK survey of MODERN PHILOLOGY for the year 1927, the famous Oxford English Dictionary, the correct title of which is *A New English Dictionary on Historical Principles*, was brought to a close by the publication on April 19 last of the concluding section, "Wise-Wyzen" in Part Two of Volume Ten. The collection of the material for this stupendous undertaking was begun more than seventy years ago, and the publication of it was initiated in 1884 under the supervision of Sir James A. H. Murray, H. Bradley, W. A. Craigie, and C. T. Onions. A few statistics may be of interest in regard to this great work: More than 414,825 words are defined and their meanings illustrated by 1,827,306 quotations, chronologically arranged. Of the 240,165 main words, 177,970 are current, 54,464 obsolete, and 9,371 alien. Ninety large columns of fine print are devoted to "Water," its compounds and derivatives. There are three columns in each of 15,438 pages, and, according to the *Periodical* (Oxford Univ. Press), it has been calculated that these columns if placed end to end would extend well over seven miles, while the lines of type similarly placed would reach 178 miles. There are more than 24,000,000 printed words in the Dictionary, and the total cost was about \$1,500,000.

Works of interest to the general public as well as to the specialist include the following: H. C. Wyld, *Short History of English* (N. Y.), a revised edition containing a bibliography of recent books on the subject and lists of texts and editions; G. H. McKnight, *Modern English in the Making* (ib.), a history of the development of the English language through Chaucer, Spenser, Shakespeare, to Dr. Johnson's dictionary; O. Jespersen, *Modern English Grammar* (London), of which part i is devoted to sounds and spelling, and parts ii and iii to syntax; S. Cox, *The Teaching of English* (N. Y.), a series of personal talks; A. Levitas, *Commercial English* (ib.), a handbook; Margaret P. McLean, *Good American Speech* (ib.), containing chapters on the international phonetic alphabet, intonation, etc., as aids in simplifying and standardizing the pronunciation of English; M. H. Wesen, *Crowell's Dictionary of English Grammar* (ib.), a handbook of American usage in which the guiding principle of the author is that "grammar was made for man, not man for grammar"; J. F. Sheahan, *The English in English Bibles* (Poughkeepsie, N. Y.), a study of biblical language; and G. H. W. Rylands, *Words and Poetry* (N. Y.), a study of poetic values, with an introduction by Lytton Strachey.

Works devoted to English literature include A. Esdalle, *The Sources of English Literature* (N. Y.), a guide to bibliographies and catalogues; L. Magnus, *English Literature in its Foreign Relations* (ib.), a study of foreign influences on English literature; and S. Halkett and J. Laing, *Dictionary of Anonymous and Pseudonymous English Literature* (vols. iii and iv, London), a new and enlarged edition, by Dr. J. Kennedy, W. A. Smith, and A. F. Johnson, extending as far as the letter P.

W. W. Lawrence, *Bæwulf, an Epic Tradition* (Cambridge, Mass.) is a thoroughly scholarly exposition of the literary and historical background of Bæwulf. Chaucer, and the mediæval

period are represented in H. S. Bennett, *England from Chaucer to Caxton* (N. Y.), which is a collection of passages of literary interest illustrating English life from Chaucer's time to the end of the mediæval period; *The Canterbury Tales of Geoffrey Chaucer* (Boston), a new edition; a very scholarly edition of the same work by Prof. J. M. Manly of the University of Chicago; and E. G. Miller, *English Illuminated Manuscripts of the XIVth and XVth Centuries* (Paris), a collection of beautifully illustrated manuscripts.

E. Hicks, *Sir Thomas Malory: His Turbulent Career* (Cambridge, Mass.) is the first biography of the author of the *Morte d'Arthur*, which has been called "not only the greatest of English prose romances, but also in a very real sense the pioneer of the English novel," and of which the only perfect copy printed by Caxton that is known to exist is now in the Morgan Library of New York.

The Elizabethan Period is dealt with in R. W. Chambers, *The Saga and the Myth of Sir Thomas More* (London), published in the *Proceedings of the British Academy*; V. von Klarwill, *Queen Elizabeth and Some Foreigners* (N. Y.), containing a series of unpublished letters found in the archives of the Hapsburg family and translated by T. N. Nash; G. R. Potter, *Elizabethan Verse and Prose* (ib.), an anthology; and W. Thorp, *The Triumph of Realism in Elizabethan Drama, 1558-1612* (Princeton, N. J.), a dissertation of Princeton University.

S. A. Tannenbaum, *The Assassination of Christopher Marlowe* (N. Y.) supplies an ingenious explanation of the circumstances attending the poet's death.

E. H. C. Oliphant, *Shakespeare and His Fellow Dramatists* (2 vols., N. Y.) contains the text of fifteen Shakespearean plays and thirty by contemporaries of the great dramatic poet. Among other works relating to Shakespeare and his epoch are A. Gray, *How Shakespeare "Purged" Jonson* (Cambridge, Eng.), an essay on Elizabethan drama; H. H. Furness, Jr., *A New Variorum Edition of Shakespeare* (Phila.) containing the tragedy of *Coriolanus*; S. Brooke, *On Ten Plays of Shakespeare and Ten More Plays of Shakespeare* (London), being essays on the leading dramas of the poet; G. F. Bradby, *The Problems of Hamlet* (London), a series of essays in interpretation; F. Madan, *Catalogue of Shakespeareana* (Edinburgh), consisting of notes in articles and books dealing with Shakespeare; W. J. Lawrence, *Shakespeare's Workshop* (Boston), essays on Shakespearean subjects; D. N. Smith, *Shakespeare in the Eighteenth Century* (London); and A. H. Thorndike, *Shakespeare in America* (London), the annual Shakespeare lecture of the British Academy, 1927.

Dr. S. A. Tannenbaum's *Shakespeare Forgeries in the Revels Accounts* (N. Y.) attempts to prove that all previous studies of the famous Revels Accounts of 1604-5 and 1610-11—the well-known forgeries of Peter Cunningham—have been superficial and unscientific and that the purpose of the forger was, among other things, to establish the dates of composition of some of Shakespeare's plays.

Works relating to the seventeenth and eighteenth centuries include *Milton on Education* (New Haven, Conn.), consisting of the *Tractate of Education* and supplementary extracts, edited by O. M. Ainsworth; E. J. Dent, *The Foundations*

of English Opera (N. Y.), a study of musical drama in England during the seventeenth century; R. Head and F. Kirkman, *The English Rogue Described in the Life of Meriton Latroon* (ib.), a reprint of a book first published in 1665; Sir Leslie Stephen, *History of English Thought in the Eighteenth Century* (2 vols., London), a new edition; and M. Dorothy George, *England in Johnson's Day* (N. Y.), a survey of social life in England as presented by contemporaries of Dr. Johnson.

The following dictionaries and repertories are worthy of mention: *A Treasury of English Aphorisms* (Boston), edited by L. P. Smith; H. B. English, *Students' Dictionary of Psychological Terms* (Yellow Springs, Ohio), containing definitions of over two thousand terms; P. D. Hugon, *Our Minds and Our Motives* (N. Y.), a compilation of the facts and theories of human behavior; Winnifred S. Fales, *Household Dictionary* (ib.), a handbook for the home; J. Spiegel, *International Business Dictionary* (ib.), which is the second edition of the *Standard Business Dictionary* extended in its scope beyond the borders of the United States to include the business terms of the entire commercial world; L. Herendi, *Complete Dictionary of Banking Terms in Three Languages* (ib.), in English, French, and German; W. F. Spalding, *Dictionary of the World's Currencies and Foreign Exchanges* (ib.), in the form of a concise encyclopedia; a revised edition of *The Literature of Business* (ib.), edited by A. G. Saunders and H. L. Creek; and the second volume (B) of *Universal Knowledge* (ib.), a dictionary and encyclopedia of arts, sciences, history, biography, law, literature, religions, nations, races, customs, and institutions.

GERMANICS. An important event in the history of cultural relations between Germany and the United States is the reestablishment at Columbia University of the Deutsches Haus which was discontinued during the World War. Among the activities of the House will be an annual German book exhibition. A useful contribution along these lines is the first volume of A. B. Faust's *The German Element in the United States* (N. Y.), which treats of the political, moral, social, and educational influence of the Germans in this country.

The Oxford Book of German Verse (London), edited by H. G. Fiedler, is a valuable anthology extending from the twelfth to the twentieth century. Other works of interest include J. W. Thompson, *Feudal Germany* (Chicago), a comprehensive study of the German people in the Middle Ages; R. H. Fife, *Young Luther* (N. Y.), an outline of the German Reformer's intellectual and religious development up to 1518; A. Hyma, *Luther's Theological Development from Erfurt to Augsburg* (ib.); and S. Liptzin, *Lyrical Pioneers* (ib.), being investigations into German social poetry; and Eva Fiesel, *Die Sprachphilosophie der deutschen Romantik* (Tübingen), a scholarly investigation. B. Fridsma, *The Place of the Frisians in Dutch History* (Grand Rapids, Mich.) is a brief survey of the important rôle played by this little-known people in Holland.

The American-Scandinavian Foundation continued its praiseworthy activities under the editorial supervision of Prof. W. W. Lawrence. Among its contributions of the past year were *Norway's Best Stories* (N. Y.), edited by Hanna

A. Larsen, and translated by Anders Orbeck; and *Sweden's Best Stories* (ib.), by the same editor, with translations by C. W. Stork. C. Bergendoff, *Olavus Petri and the Ecclesiastical Transformation in Sweden* (ib.) consists of a study in the Swedish Reformation. Mention also may be made of the following: Julia D. Adams, *The Swords of the Vikings* (N. Y.), a selection of stories from the works of Saxo Grammaticus; and S. J. Beckett, *The Fjords and Folk of Norway* (ib.), a new and revised edition.

ROMANCE. The most useful contribution to the general field of research in the Romance languages is the Spanish translation of W. Myer-Lübke, *Introducción a la Linguística románica* (Madrid), a new version based on the third German edition, with notes and additions, by Américo Castro of the University of Madrid. Other works worthy of mention include *Philologische Studien aus dem romanischgermanischen Kulturkreise*, offered to Karl Voretzsch on his sixtieth birthday, and *Zum Gedenken an seine erste akademische Berufung vor 35 Jahren*, and edited by B. Schädel and W. Mulertt (Halle, 1927); L. T. Ojeda, *La geografía prehistórica del Mediterráneo* (Valparaíso), being the substance of a lecture given in the Ateneo of that city; the same author's *Los idiomas latinos: proceden de una lengua ibero-ligur?* (ib., 1927); P. S. Allen and H. M. Jones, *The Romanesque Lyric* (Chapel Hill, N. C.); M. Heepe, *Lautzeichen und Ihre Anwendung in verschiedenen Sprachgebieten* (Berlin); E. C. Hills, *Drift in the Romance Languages* (N. Y.), a reprint from *Hispania*; H. Rheinfelder, *Das Wort Persona* (Halle); O. J. Tallgren, *Survivance arabo-romaine du catalogue d'étoiles de Ptolomée* (Helsinki), containing philological studies on various manuscripts; *Modern Language Instruction in Canada* (2 vols., Toronto), published by the American and Canadian Committee on Modern Languages; R. Guiette, *La Légende de la Sacristine* (Paris, 1927), a study in comparative literature; *Periodica* (X-XIV), containing complete sets of scholarly journals in *Koehler's Antiquarium* (Leipzig, 1927); and *Supplementheft XIV der Zeitschrift für Romanische Philologie* (Halle, 1927), consisting of the Bibliography of 1924, edited by F. Ritter.

The student is also referred to the "American Bibliography for 1927," issued in the *Publications of the Modern Language Association of America*, and of which the French section was prepared by Prof. H. C. Lancaster of Johns Hopkins (pp. 49-60); Spanish, by Professor J. P. W. Crawford of the University of Pennsylvania (pp. 60-65), and Italian, by Prof. J. E. Shaw of the University of Toronto (pp. 66-69). The *Romanic Review* (N. Y.) also contained the first part of "Romance Linguistics in 1927" (pp. 366-378) by Prof. Pauline Taylor of New York University. The three sections published included *General, Vulgar, and Medieval Latin and Phonology*.

FRENCH. Professor Bernard Fay, of the University of Clermont-Ferrand, France, and Prof. Daniel Morent, of the University of Paris, continued in the *Romanic Review* (N. Y.) their very interesting discussion of the methods of literary criticism. The former upholds a form of impressionism in which beauty is emphasized—a modification of the standardized theories of Matthew Arnold, Emile Faguet, and Croce—while the latter prefers the historical method as

first introduced by Taine and later developed by the Germans and Gustave Lanson. It is needless to add that the debate is of the utmost importance to students of literature and its history.

The eighth edition of the dictionary of the French Academy was announced by the *New York Times* in the summer as approaching completion. Though representing 50 years of study and discussion, this dictionary will be limited to two volumes and will contain only about 28,500 words. The difference between the imposing Oxford English Dictionary mentioned above and the Academy's product is that the former is inclusive and the latter rigidly exclusive. This divergence of point of view is further marked in that the editors of the English dictionary assumed a liberal attitude, welcoming wherever possible neologisms and even such colloquialisms as appeared to be engrafted permanently into the English language, whereas the Academy's Dictionary committee of six is distinctly conservative, aiming on all occasions to defend the French language against all foreign accretions.

The grave danger of the Academy's method is that it will perforce tend to render the language static, for, as René Doumic, Permanent Secretary of the Academy, states: "Our rule is to accept new words only when they have been current sufficiently long to warrant the belief that they will take a place in the language." While there is sound reason to object to such snobbish intrusions as "sport," "5 o'clock," "high life," "meeting," "leader," "vacation," "car," "footing" (for "walking"), it is absurd to pretend to exclude all English importations, for one can well imagine how impoverished our English language would be if we had not freely borrowed from the French our vocabulary of automobiling, aviation, etc. That the Academy does not, however, adhere strictly to its self-imposed rules, may be seen in the fact that it accepted in its membership Abel Hermant, whose *Xavier, ou les Entretiens sur la grammaire française* (Paris) is liberal, to say the least, and whose "discours de réception" was found, by M. Willy, to contain more than twenty words not existing in the Academy's dictionary. The august institution also "crowned" Henri Bauche's *Le Langage populaire* (Paris), which is, in brief, a study of Parisian argot. All of which merely emphasizes the fact that the influence of the Academy, largely because of its autocratic and reactionary attitude—as a consequence of which it is almost entirely out of touch with the rapid changes taking place in French life—is steadily on the wane. As M. Hermant says of the third and fourth conjugations of the French verb, it is "dying."

Bibliography, in which the French have generally excelled, is represented by numerous contributions, of which the most important are the following: a reprint of the famous Brunet, *Manuel du libraire et de l'amateur de livres* (9 vols., Paris); *Les Trésors des Bibliothèques de France* (part vii, Paris), published under the supervision of R. Cantinelli and E. Dacier; A. Blum, *Les Origines du livre à gravure en France* (ib.), devoted to the typographical incunabula; *Catalogue des thèses et écrits académiques* (part 41, ib.), published by the Ministry of Public Instruction; L. Carteret, *Le Trésor du bibliophile romantique et moderne, 1801-1875* (4 vols., ib.); L. Delteil, *Annuaire des ventes de livres, 1926-1927* (ib.); and A. Grandin, *Bibliographie générale des sciences juridiques, poli-*

tiques, économiques, et sociales (ib.), comprising the years 1926 and 1927. General works on French literature include J. Haas, *Kurzgefasste französische Literaturgeschichte von 1549-1900* (III Band, Leipzig), dealing with the period from 1715 to 1820; *Handbuch der Frankreichkunde* (part i, Frankfurt); W. Gottschalk, *Die humoristische Gestalt in der französischen Literatur* (Heidelberg); V. Klemperer, *Geschichte der französischen Literatur* (Band V, Leipzig); and D. Mornet, *Histoire de la littérature et de la pensée françaises contemporaines, 1870-1925* (Paris), a very scholarly and stimulating study.

The mediæval period of French literature is represented in the following: *Mélanges offerts à M. Alfred Jeanroy* (ib.), edited by J. Bédier, W. P. Shepard, A. Langfors, A. Thomas and J. J. Salverda de Grave; B. A. Jeanroy, *Le Roman de la Rose* (ib.); F. Schneegans, *Le Théâtre édifant en France au XIV^e et XV^e siècles* (ib.); Margaret Schlauch, *Medieval Narrative* (N. Y.), a collection of translations; R. Bossuat, *Drouart La Vache, traducteur d'André Le Chapelain 1290*, (Paris); the same editor's *Les Livres d'Amours de Drouart La Vache* (ib.); A. Hilka, *Drei Erzählungen aus dem didaktischen Epos, L'Image du Monde* (Halle); L. Hoffrichter, *Die ältesten französischen Bearbeitungen der Melusinensage* (Halle); R. T. Holbrook, *Guillaume Aleïs et Pathelin* (Berkeley, Calif.); E. von Jan, *Das literarische Bild der Jeanne d'Arc* (Halle); O. Kjava, *Études sur deux poèmes français relatifs à l'Abbaye de Fécamp* (Helsinki); and J. Beck, *Les Chansonniers des Troubadours et des Trouvères* (two vols., Phila.), containing photostatic reproductions of the music of the troubadours.

Studies in the French Renaissance include F. C. Palm, *Politics and Religion in Sixteenth-Century France* (Boston); Anatole France, *Rabelais* (N. Y.); Rabelais, *Gargantua and Pantagruel* (ib.), containing an excellent biographical sketch by H. Clouzot; Montaigne, *Essays* (2 vols., N. Y.), translated by E. J. Trechmann; and F. Strowski, *Saint François de Sales* (Paris), being a history of the religious sentiment in France in the sixteenth and seventeenth centuries.

Among the recent valuable contributions to the study of French literature in the seventeenth and eighteenth centuries, the following deserve mention: S. S. Forester, *Louis XIV* (N. Y.), a biography; E. Magne, *Bibliographie des œuvres de Boileau-Despréaux* (Paris); C. S. Gutkind, *Molière und das Komische Drama* (Halle); Pascal, *Pensées sur la vérité de la religion chrétienne* (2 vols., Paris), edited by J. Chevalier; Karl Vossler, *Jean Racine* (Munich); H. C. Chatfield-Taylor, *Creators of Modern Comedy* (2 vols., N. Y.), containing Molière with an introduction by the late T. F. Crane and Goldoni with a foreword by Stark Young; V. Thaddeus, *Voltaire, Genius of Mockery* (ib.), a biographical study; J. J. Rousseau, *Correspondance générale* (vol. ix, Paris), edited by T. Dufour and P. Plan; *The Confessions of J.-J. Rousseau* (N. Y.), translated by W. C. Mallory; and A. Lacey, *Piwérécourt and the French Romantic Drama* (Toronto).

A few noteworthy works relating to the nineteenth century include M. Souriau, *Histoire du Romantisme en France* (2 vols., Paris); A. Billy, *La Littérature française contemporaine* (2d. ed., Paris); C. P. Cambiaire, *The Influence*

of Edgar Allan Poe in France (N. Y.); Louise B. Dillingham, *The Creative Imagination of Théophile Gautier* (Bryn Mawr, Pa.), a study in literary psychology; E. M. Grant, *French Poetry and Modern Industry, 1830-1870* (Cambridge, Mass.); M. Rudwin, *Romantisme et Satanisme* (Paris); P. Moreau, *Chateaubriand* (Paris), a biographical study; L. P. Shanks, *Flaubert's Youth, 1821-1845* (Baltimore); M. Josephson, *Zola and His Time* (N. Y.); J. Larnac, *Colette, sa vie, ses œuvres* (Paris); H. S. Schwartz, *Alexandre Dumas, Fils, Dramatist* (N. Y.); W. L. Schwarz, *The Imaginative Interpretation of the Far East in Modern French Literature, 1800-1925* (Paris); E. Sée, *Le Théâtre français contemporain* (Paris); Paul Souday, *André Gide* (12th ed., ib.); the same author's *Paul Valéry* (12th ed., ib.); N. Ségur, *The Opinions of Anatole France* (N. Y.), translated by J. L. May; Hilda Norman, *Swindlers and Rogues in French Drama* (Chicago); and *Types of Farce Comedy* (N. Y.), consisting of nine farce comedies from Aristophanes to Anatole France, edited by R. M. Smith and H. C. Rhoads.

Finally, the following studies on the French language deserve to be noted: P. Barbier, *Etymological Notes on the French Language* (Leeds, Eng.); H. Langlard, *La Liaison dans le français* (Paris); and H. Sensine, *L'Emploi des temps en français* (2d ed., ib.).

ITALIAN. The Italian Book Exhibition, held at the Casa Italiana, Columbia University, New York, from May 25 to October 15, 1928, was the first of its kind ever given in the United States. It was organized under the auspices of the Ministries of Foreign Affairs and Public Instruction of Italy and the Institute of Italian Culture in the United States.

The Casa Italiana Exhibition contained about 15,000 volumes, representing every domain of thought and extending from the period of Dante to the present day. For an excellent account of the history of fine book making in Italy, the reader is referred to W. D. Orcutt, *The Book in Italy* (N. Y.) and the *Catalogue* of the above Exhibition. The *Italiana Bibliography*, edited by T. W. Huntington (N. Y.) is, on the other hand, an approach to a comprehensive selected list of books in English relating to Italy.

Works dealing with mediæval Italian literature include L. Salvatorelli, *The Life of Saint Francis of Assisi* (N. Y.), translated by E. Sutton; E. Gilson, *St. Thomas d'Aquin* (4th ed., Paris); M. Grabmann, *Thomas Aquinas* (N. Y.); Dante, *The Inferno* (ib.), translated by S. F. Wright; L. Valli, *Il linguaggio segreto di Dante e die "Fideli d'Amore"* (Rome); E. H. Wilkins, *The University of Chicago Manuscript of the Genealogia Dcorum Gentilium of Boccaccio* (Chicago); Boccaccio, *The Decameron* (N. Y.), translated by John Payne; R. De La Sizeranna, *Le vertueux Condottiere* (Paris), a history of Federigo de Montefeltro, Duke of Urbino, 1422-1482; E. McCurdy, *The Mind of Leonardo Da Vinci* (N. Y.), a biography; Montenovesi, *Beatrice Cenci* (Rome); G. Prezzolini, *Niccolo Machiavelli, The Florentine* (N. Y.); E. Donadoni, *Ugo Foscolo* (2d ed., Palermo), a study of the critic and poet; *Poems of Giovanni Pascoli* (N. Y.), translated by Arletta M. Abbot; and L. Fiumi and A. Henneuse, *Anthologie de la poésie italienne contemporaine* (Paris).

The following linguistic studies are also worthy of note: K. Jäberg and J. Jud, *Prospectus of the Linguistic and Ethnographic Atlas of Italy and Southern Switzerland* (Geneva); G. Puccio, *La Questione della Lingua italiana a Malta* (Milan); and *Studi di Filologia Italiana* (Florence, 1927), a new review established by the Reale Accademia della Crusca.

SPANISH. The founding in 1928 of the *Revista de Estudios Hispánicos* (N. Y.) is an event of capital importance in the literary relations of the United States with South America, for the review is devoted solely to the study of the history of South American literature. The editor of the new Journal is Prof. Federico de Onís, of Columbia University, and its sponsors are the University of Porto Rico (through whose munificence it is published), Columbia University, and the Centro de Estudios Históricos of the University of Madrid. Its most valuable contribution is a comprehensive bibliography of South America published in each issue. On the subject of bibliography, we may note R. Hoecker, *Das Spanische Bibliothekswesen* (Linz), a bibliographical investigation; and Harriet D. MacPherson, *Bibliography of Spanish Books for a Medium-Sized College Library* (Boston), a reprint from the *Bulletin of Bibliography*. Works on the early period of Spanish literature include C. C. Marden, *Cuatro Poemas de Berceo* (Madrid); Winifred Sturdevant, *The Misterio de los Reyes Magos* (Baltimore, 1927), studying its position in the development of the mediæval legend of the Three Kings; John Van Horne, *El Bernardo of Bernardo de Balbuena* (Urbana, Ill., 1927); G. T. Northrup, *El Cuento de Tristan de Leonis* (Chicago); and G. Diaz de Gomez, *The Unconquered Knight* (N. Y.), a chronicle of the deeds of Don Pero Nino, translated from the mediæval Spanish tale of chivalry.

In the later periods of Spanish literature, we have F. de Los Rios, *Religion y Estado en la España del siglo XVI* (N. Y.), a publication of the Instituto de Las Españas; Rebecca Switzer, *The Ciceronian Style in Fray Luis de Granada* (ib.); E. K. Kane, *Gongorism and the Golden Age* (Chapel Hill, N. C.), a study of unrestraint in the arts; O. H. Green, *The Life and Works of Lupercio Leonardo de Argensola* (Phila.); Barbara Matulka, *The Cid as a Courtly Hero* (N. Y.), with special reference to French literature; Miguel de Unamuno, *The Life of Don Quixote and Sancho* (N. Y.), translated by H. P. Earle; Iris L. Whitman, *Longfellow and Spain* (N. Y.); and Pauline L. Goode, *Easy Spanish Books for Children* (N. Y.), a bibliography.

On South America, we have E. J. Hall and F. Aguilera, *Introducción a la historia de la América latina* (N. Y.); Bernal Diaz del Castillo, *The Discovery and Conquest of Mexico* (ib.), translated by Professor Maudslay; and G. B. Winton, *Mexico, Past and Present* (Nashville, Tenn.).

PHONETICS. Margaret P. McLean, *Good American Speech* (N. Y.), is a book on phonetics, especially intended for teachers of elocution and dramatics. M. E. De Witt, *Our Oral Word* (ib.) discusses phonetics as a social factor, while A. Crofton and Jessica Royer, *Self-Expression Through the Spoken-Word* (ib.) is a textbook on the use of the speaking voice. Readers interested in proposed international languages may consult G. Peano, *Interlingua* (Torino), devoted to Esperanto; and the Rev. E. P. Foster *Alphabet*

of Ideas or Dictionary of Ro (Waverly, W. Va.), containing a grammar and vocabulary of the world language invented by the author.

PHILOSOPHY. The year 1928 failed to bring forth a new method in philosophy, or a great intuition, or a new synthetic system in the style of Hegel or Spencer. The Idealists were the great system of builders, but they were comparatively silent, while the Realists, ascendant in the present reign of science and common-sense, were mainly critical and polemical, possessing no common doctrine except their enmity toward Idealists. Opposed in principle to the deductive method in philosophy and the speculative constructions of the past and incapable of forming inductive systems from the diffuse complication of scientific fact, the Realists have left us, oddly enough, with no system at all. Though the recent works of Russell, Whitehead, Broad, and Alexander make an admirable effort to harmonize the conclusions of the various sciences and show their relation to experience, the results are qualified and fragmentary and stamped with the mutability and uncertainty of science itself.

Though no new systems or methods had their inception in 1928, a number of solid contributions were made and several important philosophical movements advanced. In Germany, phenomenology and the related study of historical essences particularly flourished. Symbolic logic was also gaining new adherents and making new developments. Permanent progress in phenomenology and symbolic logic seemed quite possible and should be looked for in the future, since both are independent of the changing and philosophically ambiguous results of natural science.

In America the distinction between Idealist, Realist, Pragmatist, Naturalist, and Personalist became less sharp and less passionate. A need for a new analysis was felt. The clash between New and Critical Realists, so common a few years previously, had almost ceased, the interest of the contestants having turned to a more critical examination of their positions. All cults and schools tend to lose that first ardor of advocacy, to be modified and refined. The New Realist in his opposition to Critical Realism found himself close to Idealism. The Naturalist, once a rebel against Religion and Ideals, had become quite orthodox. The Pragmatist when he states his position fully is not quite a Pragmatist, and the Behaviorist, though he would rather not talk about it, really admits an epiphenomenal consciousness. Personalists were beginning to realize that no one objects to the self as such but only to certain theories about the self. The tendency of the times was toward a greater caution and a more refined analysis. Prof. R. B. Perry in an article in the *Journal of Philosophic Studies* suggested that "the present peace (in the philosophical world) is not due to conquest or exhaustion but to the invention of arbitrating concepts—," the which, breaking down the one-sidedness of the opposing schools, promote peace and steady progress.

Among the contributions of the year were two important historical works. Part v of Ueberweg's *History of Philosophy* (*Grundriss der Geschichte der Philosophie*), which deals with nineteenth-century philosophy outside of Germany, is a very valuable book, though it does not compare in thoroughness and accuracy with the corresponding volume on German philosophy of the nineteenth century. S. Radhakrishnan's second vol-

ume of *Indian Thought* also appeared. Though more technical and difficult than the first volume, its breadth and clarity, and its detailed comparisons of Indian and European systems (a procedure which most writers on Indian philosophy avoid) make it an invaluable source of information concerning systems of thought with regard to which most Westerners are completely ignorant. The section devoted to *The Vedanta* is particularly instructive and quite comprehensible to lay readers.

The ninth volume of the *Jahrbuch für Philosophie und Phänomenologische Forschung* published during the year contains three essays. The more important ones are: Ludwig Landgrebe's exposition of Dilthey's *Sciences of the Mind*, (*Geisteswissenschaften*) and Husserl's lectures on the *Phenomenology of the Inner Consciousness of Time*. Dilthey, who has a great reputation in Germany, is here presented as one of the founders of the *Geisteswissenschaften*. His doctrine that all knowledge is nothing but a sort of self-consciousness and his related theory that all systems of thought are merely a function of the culture in which they develop are competently expounded. Husserl's lectures on the consciousness of time combine the insights of Bergson and Whitehead with the rigor and thoroughness of the strict phenomenological method. They constitute an indispensable completion of the famous treatment of intentionality (*Intentionalität*) in the last two *Logische Untersuchungen*.

Martin Heidegger, who is indebted to both Husserl and Dilthey, published his long essay *Sein und Zeit* in the previous *Jahrbuch*. An interesting novelty in Heidegger's system is the concept of *care* (*Sorge*) which he introduces in place of Husserl's *intentionality*. It is through care or anxiety that we know the past and the future, and it is anxiety which, in an almost pathological way, builds up our whole system of knowledge. The preference for a concrete concept like *care* is characteristic of Heidegger as contrasted with Husserl.

The publication of Martin Farber's book, *Phenomenology as a Method and as a Philosophical Discipline*, should serve to make Husserl better known to English readers. It is a brief but competent book and contains a number of useful comparisons of phenomenology with other systems of philosophy.

One very important event of the year in the philosophical world was a translation of Edward Spranger's *Lebensformen* (*Types of Men*). This book, occupied with the general field of synthetic psychology and ethics of personality, is noteworthy in itself and representative of a whole school of German philosophy. For the first time English readers are afforded an insight into *Geisteswissenschaft* and the phenomenological analysis of historical essences. The science of the soul, in the sense of *geisteswissenschaftliche* psychology, had its beginning in Hegel's *Phenomenology of Mind*, one of the most famous and influential books of the century. The same phenomenological studies have been carried on by Dilthey, Scheler, Spranger, and a host of others. *Geisteswissenschaft* is very closely related to Husserl's phenomenology. The difference between Husserl's phenomenology and theirs is that he is concerned with logical essences and with those essences of language, meaning, perception, etc., which admit of the same rigorous treat-

ment, while *they* are occupied with historical-psychological forms and structures, which require a somewhat different method. For while their essences are concrete and temporal, Husserl's, though sometimes relating to time, are really static and timeless. But however these two phenomenologies may differ in other matters, they are agreed in this: that systems are to be built up, not through induction or deduction, but by pure description of the essences embedded in experience and discovery of the necessary connections between them.

Spranger's work, which is based on Dilthey and ultimately on Hegel, shows also some neo-Kantian influence. Like Dilthey, he sought to lay the foundations of the *Geisteswissenschaften*. His particular contribution is the introduction of "types of men," striking and characteristic men who epitomize in themselves a whole movement or epoch. Knowledge of these historical "types" or essences is to be obtained by an act of historic æsthetic empathy (*Einfühlung*). If we are to understand the deeper, more fateful parts of history we must feel ourselves into not only the life and modalities of our hero but that of his whole cultural environment. Nor should one attempt to interpret a "type" in terms of one value exclusively. The American may be primarily economic, but to treat him as an economic animal, pure and simple, would be to neglect his theoretic, social, æsthetic, and religious motives and his will to power. There are six types of men in which either theoretic, economic, etc., motives predominate, but the types are not pure.

Most history narrates the life of individuals with all its accident and irrelevance. Such history can have no laws since the relation between a particular individual and objective institutions is fortuitous and impermanent; but if history occupies itself with essences, types of men, then laws are possible. The man of power, of which Napoleon is an example, may have objective and necessary relations to Art, Science, or Religion. With the developments of Hegel, Dilthey, and Spranger, history becomes a science with generality and laws like any other; but the science can only be advanced according to Spranger by the elimination of the oneness of previous systems. "Progress may be hoped for," he says, "only through a union of the historical sense with clarified *geisteswissenschaftliche* psychology."

Another important contribution of the year is the English translation of the second volume of (*Der Untergang des Abendlandes*), Spengler's *Decline of the West*. The basic concepts of Spengler: Culture (Apollonian, Magian, and Faustian), Civilization, and the biological metaphor of the growth and decay of Cultures are already well known to English readers through the first volume. It is interesting that Spengler agrees with Spranger in regarding all historical processes as relative to the observer, but disagrees with him in the matter of human freedom. Spengler carries his relativism to great lengths. "Every living being," he says, "livingly experiences every other being and its destiny only in *relation to itself*." This relativism would seem to apply to every one but Spengler himself. He alone transcends time and space and judges of things with an impartial eye, deducing the course of history and predicting the decay of cultures. Individual cultures, he maintains, have a necessary development. Only the relation between these cultures is accidental and indeterminable. A brilliant ex-

ample of this is the interruption in the development of Mexican Culture by a handful of barbarians. Since the life of the individual in his culture is preestablished, there can be no human freedom. Spranger holds in opposition to this that human freedom renders prediction in history impossible. As to the future of human groups, the question is not what *must*, but what *ought* to be.

The preoccupation with Phenomenology and *Geisteswissenschaft* in Germany was paralleled by an increasing interest in logic in England and America.

Paul Weiss contributed an interesting article in *Mind* in which he attempts to solve some of the paradoxes involved in the theory of types (Whitehead and Russell). According to Russell's theory of types it is impossible to make significant assertions about *all* propositions, and yet Russell himself is obliged to make such assertions in order to establish the hierarchy of propositions. Weiss concludes that the theory should be modified and therefore sets himself to solve a number of the "type" paradoxes, with a view to justifying a certain range of unrestricted propositions. He concerns himself principally with the "heterological-autological paradox." Autological words express properties they possess and heterological words properties they do not possess. But the word "heterological," if it possesses the property of autologicality, belongs to the class of heterological words; if it possesses the property of heterologicality, it belongs to the class of autological words. This paradox is solved by the consideration that one word may belong to two apparently mutually exclusive classes, if the classes are determined in a different way. "Heterological" belongs to the first class by virtue of a certain relation, to the second by virtue of *property* it possesses. Weiss would attempt a similar solution to other and more serious paradoxes. The paper throws some light on the very puzzling, much disputed problem of "types."

F. S. C. Northrop, in an article for *Monist* makes a plea for symbolic logic which is quite characteristic of the changing interest. He maintains that the old Aristotelian logic with its calculus of classes, though pedagogically valuable and important in itself as a special case of logic, should not be identified with the whole of logic, relations, functions, and propositions being every bit as fundamental as classes. Aristotelian logic shows its weakness, he holds, even in the matter of immediate inference. Thus, "All just acts are expedient acts," though consistent with, "All unjust acts are expedient acts," can be proved inconsistent with it on the older principles of immediate inference. The paper contains interesting graphs, borrowed from Professor Sheffer, showing the contrast of Aristotelian and Boolean logic.

The logical foundations of mathematics have been recently brought to attention by the criticism of L. E. J. Brouwer. The intuitionism of Brouwer is opposed by the formalism of Hilbert. In this discussion of the foundations of their subjects, mathematicians have become philosophers in spite of themselves. Frege, Peano, Whitehead, and Russell have insisted on the priority of logic. Brouwer not only denies the logical basis of mathematics but questions the laws of logic themselves. Arnold Dresden and James Pierpont in the *Bulletin of the American Mathe-*

matical Society give an interesting account of Brouwer's rejection of the Law of Excluded Middle. Extensive false theories, he says, have been erected on this principle and it has been given an undue extension to sets which are not finite. The rejection of the Law of Excluded Middle has great consequences in mathematics. For one thing the system of real numbers is not "ordered" and many proofs become invalid. The question of the unlimited applicability of this principle is very much involved in Zermelo's theorem and the existence of selections from all classes of classes. Professor C. I. Lewis discusses "Queer Systems" in which some of the laws of logic are omitted. Other philosophers have become very much interested in the possibility that there are "twilight zones" in which reality is only partly determined and dichotomies are out of the question. Professor Whitehead believes that the Law of Excluded Middle precludes a satisfactory theory of change and Professor Dewey thinks the principle often impracticable.

The validity of this principle is also involved in McTaggart's theory of "Determining Correspondence" (*The Nature of Existence*), by means of which he "disproves" the existence of Time and all substances which are not Spiritual. Substances to exist must be capable of division into parts of parts to infinity and these parts must have sufficient descriptions. The question now is whether each of these parts is either *a* or *not a* and can be determined by a sufficient description as a certain part of a broken line of a primary part of the substance. McTaggart denies that sufficient descriptions can be found for other than spiritual substance and thus disproves their existence. John Wisdom, in a brilliant article in *Mind*, disproves McTaggart's subtle and very consequential theory of Determining Correspondence, but in a manner that is too technical to be repeated here.

Another article in the same issue of *Mind* by R. M. Blake attacks McTaggart's theory, or rather dismissal, of propositions. McTaggart had held in *The Nature of Existence* that judgments when they are true correspond to facts and that there is thus no need to assume propositions as well. Professor Blake points out that judgments are temporal events and that therefore on McTaggart's theory, truths are only true when asserted and the same truth (such as $2 + 2 = 4$) cannot be asserted twice over. Hence, truths are not eternal and cannot be shared by different minds. Professor Blake's attitude here is representative of a widespread revival of Platonism, a movement largely inspired by G. E. Moore and the early Russell.

The general interest in Spinoza, so much in evidence the last few years, was doubtless to be increased by a new and very comprehensive treatment of this philosopher by Richard McKeon. *The Philosophy of Spinoza* is a thorough-going, scholarly work containing a detailed account of Spinoza's relation to experimental science, and experimentalists such as Boyle, and a competent chapter on "God and the Universe" in which the relation of Substance, Attribute, and Mode are explained with great subtlety and interest.

The recent popularity of Spinoza is another indication of the spread of Rationalism. In Germany, Rationalism turns to Kant and Hegel, in France, to Descartes. In America, Spinoza has become a leader who is making headway in many places, against the prevailing Pragmatism.

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PHONETICS. See PHILOLOGY, MODERN.

PHONOGRAPH. See MUSIC.

PHOSPHATE ROCK. The phosphate industry throughout the world was on practically the same basis in 1928 as in the previous year. It was reported that in Russia searches were being prosecuted for high-grade phosphates and there were plans to develop known deposits which were situated favorably for working. Morocco was active during the year sending several thousand tons to the American market at a price said to be below that for the same grade from Florida. In the United States the production of domestic phosphate rock was 3,439,921 long tons, valued at \$12,339,850, or 8 per cent more in quantity and 10 per cent more in value than the production of 1927 as reported by the U. S. Bureau of the Mines, namely 3,170,699 long tons, valued at \$11,253,352. The United States both imported and exported phosphate rock, the imports in 1927 amounting to 28,195 long tons, valued at \$292,871, and the exports, 918,211 long tons, valued at \$4,731,562. The export figures for 1928 were on approximately the same basis, with exports of 92,517 long tons of high-grade hard rock valued at \$626,238, and 806,247 long tons of land pebble and other phosphate rock, valued at \$3,826,863. Most of the exports from the United States went to Europe, but American exporters were beginning to fear competition from the producers of North Africa.

There were published during the year by the U. S. Bureau of Mines descriptions of experiments in flotation of low-grade phosphate ores which indicated the successful application of this method and the treatment of phosphate rock. Unground sand figured in tests in which from 90 to 95 per cent of the phosphates were recovered affording concentrates of commercial grade or a product that required but a single treatment to make it marketable. At various plants in the United States there were extensions of facilities for the manufacture of phosphoric acid and various phosphates for technical and industrial use. At Nashville, Tenn., and at Columbia, Tenn., the Victor Chemical Company and the Armour Chemical Works were building new plants for the manufacture of phosphoric

acid by the sulphuric acid process, a method being used by five companies in the United States. Florida and Tennessee continued as the leading producers of phosphate rock, the output of the former in 1928, 2,821,961 long tons, being valued at \$9,324,306, and of the latter, 577,095 long tons, at \$2,853,237. See FERTILIZERS.

PHOTOGRAPHY. Although there were no outstanding results of theoretical interest in photography published during 1928, two practical developments commanded attention. These were the extraordinary progress in research work on the recording of sound in conjunction with motion pictures, and the successful demonstration and introduction of a process of natural-color motion pictures for the amateur. The former resulted in a certain drastic revision of motion-picture-production technic, an influx of electrical, acoustic, and mechanical engineers into the motion-picture industry, and a stricter supervision of chemical development of negatives. The other development made possible the dream of every photographer over the last half-century of a simple process of photography in natural colors.

Two notable scientific gatherings convened during the year—the Seventh International Congress of Photography which met in London, July 9–14, and the Second International Congress of Radiology held July 23–27, in Stockholm. Progress was made at the London gathering toward an international standard photographic unit of intensity for the sensitometry of negative materials when a report was read on this subject.¹ The unit proposed was one visual candle power of sunlight quality. The Congress, however, decided to define the unit in terms of a standardized light source and filter, the combination giving radiation of approximately sunlight quality. Another valuable step was the series of proposals made by the Cinematographic Committee relative to characteristics of motion-picture film.² The Eighth Congress was planned to be held in Dresden in 1931.

The Radiology Congress was attended by nearly one thousand members from 40 countries. The two lasting achievements of this meeting of photographic interest were: (1) the unanimous adoption of proposals for standards of protection, and (2) the approval of a standard international unit of X-ray intensity.³ The Third Congress was arranged to be held in Paris in 1931.

APPLICATIONS OF PHOTOGRAPHY. For over a half-century the wet collodion process has been used as an essential step in the preparation of half-tone negatives for reproduction. By 1928 it was being displaced rapidly by a gelatin-coated paper called strip-film paper.⁴ Another important development in the photo-mechanical field was the continued increase in the use of color in advertising which depends to a great extent on photography since the various hand processes, wood engraving, lithography, etc., are all too slow or too costly and they often do not give a realistic impression.⁵

There had been a number of notable improvements in methods of offset and color roto-gravure work.⁴ Pictorial telegraphy was used daily in the service of illustrated journalism and methods were being tested of receiving pictures in the form of half-tone dots to be printed down directly on to zinc plates. Another promising photo-composing machine called the "Luminotype" was in-

introduced which sets seven thousand letters per hour.⁶

As previously noted, methods for the reproduction of sound represented the greatest advance in the art of motion pictures during the year 1928. Ten different systems were known to be in use, and over eight hundred theatres had been equipped with sound reproduction devices.⁷ Two distinct methods of sound recording were being used, namely (1) wax-disc recording, and (2) photographic recording. Two types of photographic records were being made commercially: (a) variable density, an example of which is the "Movietone," and (b) variable width, represented by the "Photophone" process. The photographic records are made by converting the electrical impulses produced in the microphone into light modulations which are impressed on the film. The sound is recorded either on the same film as the negative picture, or else on a separate film. On the positive used for projection, the sound record appears as a narrow area along one edge of the film. To reproduce the sound, light from a concentrated filament lamp is projected through the film upon a photo-electric cell. The electrical modulations from the cell are then amplified and led into a loud speaker to reproduce the sound.

One producer built a series of recording studios in California costing several millions of dollars during a period of ninety days.⁸ A symposium on sound motion pictures was held by the Society of Motion Picture Engineers, the papers filling an entire number of its *Transactions*.⁹ Four types of sound pictures have been classified by Millikan:¹⁰ (1) musically scored pictures; (2) pictures with songs; (3) news reels; (4) dialogue pictures.

The Academy of Motion Picture Arts and Sciences organized in Hollywood, Calif., in 1926 was proving a stabilizing and constructive influence to the industry. In the Academy's annual report¹¹ mention was made of the efforts that had been directed toward the establishment of college courses in motion-picture technology, the drawing up of actors' contracts, the arbitration of disputes, and the publication of experimental results. Academy Report No. 1 summarized the results of extensive experiments relative to the use of incandescent illumination. A Technical Bureau was initiated by the Association of Motion Picture Producers as a nucleus of a research laboratory for the industry.¹²

A comprehensive production programme of motion pictures for educational use was under way. Favorable results were announced of a two-year experiment in the use of films as adjuncts to teaching.¹³ A series of medical films was being produced in America under the direction of the American Medical Association and analogous work was in progress in France.¹⁴ These films were to make available the technic of the world's leading surgeons for class-room instruction. Many of the educational and medical films were being made available in the 16mm sub-standard width. The Film Foundation was formed at Harvard University for the preparation, assemblage, and distribution of education and cultural films.¹⁵

Interest in amateur cinematography was well shown by the world-wide circulation of an American publication dealing with this subject, the organization of additional clubs for the promotion of amateur film productions, and the increase and demand for the products of film libraries.

The basic principles of a new amateur process of color cinematography were worked out by two Frenchmen, R. Berthon and A. Kellor-Dorian, between 1908 and 1923. In 1925 the Kodak Company secured world rights on the patents for 16-mm. use, announcing the process on July 30, 1928, under the name *Kodacolor*.¹⁶ This process involves the use of a three-color filter on both the standard amateur camera and projector. Panchromatic film, embossed on the support side with minute cylindrical lens elements, is threaded in the camera with the support side toward the lens (opposite from normal threading), so that the lens elements image the light passing through the filters.

The embossed lenses guide the rays from the filters and impress one, two, or three images on the film according to whether one, two, or three of the filters transmit the light reflected from the subject. On development by the reversal process, a monochrome record is produced which resembles the ordinary black and white positive record. When the film is projected, light passes through the embossed lenses, through the picture, through the projector lens, and finally through the color filters which recombine the colors to reproduce the natural colors of the original subject.

Besides this major development there were published descriptions of several other color processes and more than thirty patents. Three different tri-pack processes were described, two of which were being used commercially.¹⁷ A method of making color prints on paper somewhat analogous to the Carbro process found some favor.¹⁸ Details for realizing kaleidoscopic effects with a two-color motion-picture process were discussed.¹⁹

The advances made in measurement and standardization of X-ray dosage was of interest in regard to the photographic, as well as the therapeutic, uses of X-rays. Important new data had been obtained on X-ray protection.²⁰ A method of actuating the X-ray tubes by motor impulses of the body is valuable in that photographs may be exposed at a certain instant in the cycle of various organs, such as the heart, stomach, etc.²¹ The use of intensifying screens was increasing and certain modifications were noted. Progress had been made with industrial applications of X-rays in the analysis of cellulose compounds, inspection of welds in ocean liners, extent of decay in living trees, etc.

Besides these specific applications of photography, there were numerous notable advances made in connection with astronomy, photomicrography, aerial photography, engineering, vulcanism, detection of false documents, etc. These and other special uses indicate the increasing importance of photography as a recording medium.

PHYSICAL MEASUREMENTS. In studying the properties of photographic materials, physical measurements are of utmost importance and it was encouraging to note the efforts being made during 1928 to adopt international standards in types of equipment, methods of measurement, and expression of results. Besides the unit of intensity for sensitometry previously mentioned, there was evidence offered that in the calculation of speed numbers of sensitive materials, the gradient of the *underexposure* part of the characteristic curve should be used instead of the *normal inertia* value.²² This method would give a value conforming more nearly to the usage of modern films. An effort along similar lines was the

suggestion of the use of a high intensity time-scale sensitometer for measuring photographic speed under conditions directly comparable with those existing in the camera.²²

A standard developer was proposed for international sensitometric work²² and two devices described for producing uniform development.^{22,23} A systematic nomenclature in photographic sensitometry was proposed as there was some confusion and inconsistency in existing terminology.²² Of considerable scientific interest were the contributions of the Russian investigators, notably those of Chibisof and Cheltsof relating to sensitometric characteristics, filter factors, and analogous problems.²⁴

Further data was compiled on the resolving power of photographic materials^{22, 25} which, besides its astronomical value, had an especial bearing on the photographic recording of sound. The photo-electric cell was used in several types of *densitometers* with good results. Exposure meters also were devised; one uses a selenium cell and others work on the well-known extinction principle. A rather novel departure was a meter which uses the light given by the impact of radium emanation on zinc sulfide.²⁶ One commercial printer employed a photo-electric cell to determine the correct exposure for printing amateur negatives.

Since the publication in 1927 of the comprehensive survey of the contrast characteristics of photographic papers, L. A. Jones summarized these results in a short article pointing out the factors upon which the value of contrast is dependent.²² Two general papers by the same author deal with reflecting power of colored objects²⁷ and the use of light filters,²⁸ respectively; these are of particular importance in relation to the extensive use of panchromatic film stock for motion pictures.

MANUFACTURE OF SENSITIZED MATERIALS. A survey of the patent literature reveals a great many disclosures of processes related to the preparation of acetyl cellulose and its derivatives to make *safety* film base. Extensive use of such base for amateur cine film and the demands for slow-burning stock from other sources have undoubtedly helped to stimulate this field of research. One series of patents relates to the incorporation of the silver halide in a viscose layer, thus eliminating a gelatin coating.²⁹ A method of making cellulose-acetonitrile, combining desirable properties of both nitrate and acetate support, is described.³⁰ Panchromatic film in 16-mm. width has been made available for the cine amateur.³¹

Physical properties of gelatin were being studied more extensively with reference to the suitability of various gelatins for different photographic materials. Certain protein extracts were patented as sensitizers for gelatin. Emergence of emulsion making from a secret empirical art may be indicated by the publication of papers dealing with various phases of emulsion technic and of patents disclosing certain procedures.³² Further patents on ways of preventing static and halation by incorporating certain materials in the film support are of interest.³³ A series of papers described the preparation and probable structure both of optical sensitizer³⁴ and desensitizer²² dyes.

An ultra-rapid X-ray film was produced by incorporating a material in the backing which becomes luminous on exposure to X-rays.³⁵ This

combines the X-ray screen and the film emulsion into one unit. A great many patents described light-sensitive diazo compounds and allied substances.³⁶ Papers coated with these compounds and a coupling agent are used as substitutes for blue-print paper. Inclusion of a weak organic acid prevents the two chemicals from reacting to form a dye, but if this acid is neutralized by treating the paper with ammonia gas, the dye is formed. When exposed to light, the diazo compound is decomposed and no dye is produced by the ammonia treatment. The process is therefore a method of producing positive images directly. Several papers dealing with the chemistry of diazo and other special printing processes were given by Spencer before the London International Congress.³⁷ A motion-picture film of extreme thinness, known as Ozaphane, was being used commercially in Europe.³⁸ It consists of a diazo compound incorporated in a thin viscose layer. A gelatin-coated film sensitized with ammonium bichromate for use in various processes of color photography is available.³⁹

NEW APPARATUS. Each year there are more mechanical or automatically controlled devices introduced for photographic use. The year 1928 was no exception. From the maze of patents listed relating to improvements in apparatus, certain ones, such as additional spring-driven amateur cine cameras and automatic developing machines, stand out. In the latter class are found numerous coin-actuated devices which expose photographs, develop, and deliver the prints, and sometimes even negatives and enlargements.⁴⁰ A few machines for the continuous processing of standard motion-picture negatives were adopted.⁴¹ This marked an important advance in the motion-picture industry as the processing of valuable negatives is an extremely critical operation.

The extensive use of panchromatic film resulted in the adoption of incandescent lamps for much of the photographic work, thus necessitating redesigning of these lamps.⁴² Not to be outdone, carbon arc manufacturers developed "pan" carbons, the cores of which contain rare earth metals which give a wide range of spectral illumination.⁴³ A combination mercury vapor and neon gas lamp also was claimed to be a satisfactory illuminant for exposing panchromatic film.⁴⁴ Sound motion pictures resulted in the introduction of many new pieces of apparatus in the motion-picture studio.

A continued increase in interest in amateur motion pictures was evident. The amateur was deluged with all sorts of new devices to assist him in his quest for novel effects and in editing and projecting his films; these ranging from the adaptation of a small cine camera for natural-color motion pictures to console editing cabinets constructed of inlaid woods. In addition, there were available numerous facilities such as color wheels for projection, splicing devices, lens turrets, etc.

THE PHOTOGRAPHIC PROCESS. No new developing agents of any practical significance appeared during the year, though there were about the usual number of attempts to extol the merits or point out the limitations of certain well-known reducing agents, namely, amidol, glycin, and pyrocatechin. Pyro, elon, and hydro-quinone, however, continued to be favored. Our knowledge of the chemical reactions occurring in a developer is very scant, but it was amplified by several

papers related to the rôle of sulphite in development⁴⁵ and the action of, and substitutes for, alkalis⁴⁶ and bromides.⁴⁷

Interest continued in negative developers for the production of fine-grained images.⁴⁸ This no doubt was stimulated by (1) the need for making duplicate negatives from valuable original motion-picture negatives, (2) the requirements of fine-grained emulsions for the reversal process, and (3) the necessity of a freedom from grain coarseness in sound-film records. Conditions for successful handling of film under tropical⁴⁹ as well as frigid⁵⁰ conditions have been described. A sensitometric study was made of the reversal process.⁵¹ Motion photo-micrographs made of the progress of development of individual grains reveal that development (with elon) starts from points on the grains.⁵² During progress of development the entire grain vibrates and minute tentacles are thrown out from its surface.

The chemistry of fixation was studied and it was stated that only after the bath had been used until a critical concentration of silver is present does the difficultly soluble silver-hypo complex form.⁵³ An apparatus for economical and rapid recovery of silver from spent fixing baths was described.⁵⁴

Of great interest relative to the preservation of photographic materials was the publication of a report on that subject by an international committee.⁵⁵ Recommendations were given for the storage of valuable prints and negatives including lengths of cine film. The changes in swelling undergone by gelatin during the processing of film were investigated.⁵⁶ Practical data were published relative to the handling of all photographic solutions commonly used in photography.⁵⁷

A new method of sulphur toning employed a dichromate-chloride bleach instead of the more common ferricyanide-bromide solution previous to sulphiding.⁵⁸ A novel dye-toning method utilized a single solution containing both mordant and dye, thus halving the work previously required.⁵⁹

PHOTO-THEORY. The Progress and the Hurter and Driffield medals of the Royal Photographic Society were awarded to S. E. Sheppard, of the Kodak Research Laboratories, for his researches relative to the nature of the latent image and the cause of sensitivity. The latent image is the invisible image which forms when a photographic film or plate is exposed in a camera. In his paper of acceptance, Sheppard reviewed the progress made toward solving this ever-mysterious problem.⁶⁰ Since his announcement in 1925 of the existence of silver sulphide specks of amicroscopical * dimensions formed on the silver halide grains from the decomposition of a trace of a sulphur compound in photographic gelatin, chemists and physicists have been busy devising ways to investigate this problem. The balance of evidence indicates that infinitesimal quantities of silver, smaller than the sulphide specks, are also present. When exposed to light a photo-chemical reduction of silver halide occurs, the size of the silver nuclei is increased, perhaps as a result of an internal photo-electric or photo-conduction effect as suggested independently by two investigators, Toy and Trivelli, until centres large enough to induce developability are formed. The latent image probably consists of such development centres composed chiefly of colloidal silver.

F. C. Toy⁶¹ had more recent evidence indicating that the primary stage of latent image for-

mation is probably identical with the mechanism of the photo-conductivity effect, consisting in the liberation of an electron from the halide iron. This was considered a promising line of investigation. Sheppard and Vanslow⁶⁰ corroborated this observation by demonstrating that electrons and bromine are released together by light acting on silver bromide; this was also in agreement with previous research by J. Eggert.

Another interesting phase of this intricate problem was the effort being made to measure quantitatively the free silver present in unexposed photographic plates, and to relate these data to the light sensitivity. Workers at the U. S. Bureau of Standards also made partially successful attempts to introduce colloidal particles into the emulsion to test the possibility that these may be absorbed by the grain and function as sensitivity nuclei.⁶²

Recent patents⁶³ on the use of decomposition products of gelatin (other than sulphur compounds, as described by Sheppard) in enhancing sensitivity had both theoretical and practical significance.

The treatment of photographic plates with various oxidizing and reducing agents yielded considerable useful data. Two papers on the effect of temperature on the latent image also were published.^{61,64} Bleaching of the latent image by exposing it to red light was shown to be produced also in certain cases with light of other wave lengths.^{61,65}

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* Not measurable by the most powerful microscopes.

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PHOTOSYNTHESIS. See BOTANY.

PHYSICAL CHEMISTRY. See CHEMISTRY.

PHYSICS. Physics in 1928 showed important developments and discoveries. Electrons were found to behave as waves. Relativity was confirmed by crucial tests. Modified radiation had been induced in solids, liquids, and gases of wave length altered from that of the incident ray. Five million volts were produced for atomic research. Cosmic rays had been measured and their origin found in the probable transmutation of mass into energy. A super-hard glass-cutting alloy was developed by physical research. Metal films one atom thick were used in photo-electric cells for maximum sensitivity. Televox opened the London Electrical Show with a brief address. The talking film had arrived in the theatres and television was regularly broadcast. An automatic self-recording color-analyzer had been devised with automatic computing mechanism. The

electric ultra-micrometer was at work in industrial research and in the dimensional control of products.

An event of the year in physics—a model of its kind—was the meeting of the Optical Society of America with an optical exhibition. The exhibit contained rare historical instruments and books and the programme was full of interesting papers. The climax of the meeting was Michelson's announcement of the negative result of his recent series of experiments for detecting the ether drift. Even with highly sensitive apparatus, the results showed no displacement as large as 2 per cent of that expected if, as suggested, the solar system moves through space 300 km per second. The result is profoundly significant for the tenability of the relativity theory. Michelson announced that while he accepted Einstein's relativity, he still believes the existence of the ether is necessary for light-wave phenomena.

During the year Picard and Stabel's experiments to detect ether drift also failed to show any relative motion of earth and the ether.

St. John believes the evidence was conclusive that Einstein's predicted shift of red wave lengths in the sun's radiation was a fact. For a 3800-angstrom wave the shift is 0.008; and for a 6600-angstrom wave, it is .014 angstrom. For iron rays from the centre of the sun's disk, above the photosphere, the mean shift is 0.009 observed while 0.0091 angstrom is the computed Einstein red shift. He allows for the magnitudes of other factors affecting the apparent wave length.

Einstein's predicted deflection of light by the gravitational field of the sun again was quantitatively confirmed by completed measurements of the apparent positions of the stars photographed during the 1926 total eclipse of the sun. Chazy, in his *Le Theorie de la Relativite et la Mechanique*, issued during the year, gives the evidence for accepting 42.9 seconds per century as the perihelion advance of Mercury, and 1.74 angular seconds for the deviation of light passing the sun at grazing incidence, both quantitatively predicted by Einstein.

Adams found that one remote nebula showed an apparent radial recession of 2500 miles per second, nearly double any hitherto measured speed. The "crumpling of space"—as deduced from general relativity—is the possible cause assigned by Adams for this "spurious velocity of recession." Shapley reported a proportionate effect on nearer galaxies at 10,000,000 light years, about a tenth of the distance of the nebula reported on by Adams. Relativity thus seems to have additional confirmation in phenomena unknown until recent years.

The atom retained its central position in research interest. As expected, the mathematical approaches to atomic structure were merging, and both experiment and theory supported the Bohr-Sommerfeld picture to which the spinning electron has made such a fruitful addition.

Gaviola in an experimental test of Schrödinger's theory proved that the ratios of the intensity of the lines in emission do not depend on the populations of the lower atomic levels in contradiction with the interpretation of Schrödinger's theory.

The Ferner-Davison experiments on the diffraction of electrons showed that an electron possesses, or is composed of, a wave system.

G. P. Thomson announced to the Royal Society the results of his study of "the waves of an elec-

tron." Generalizing de Broglie's theory that corpuscles are accompanied by waves, he concluded that electrons should have a wave system. Thomson's experiments actually show such waves produce diffraction rings on passing through a gold film. Motions of pure point-charge electrons would not produce such waves. The electron behaves like a group of waves whose velocities and wave lengths depend on the speed and mass. For electrons falling through 25,000 volts, he computed the electron wave length at 0.75×10^{-9} cm, about that of hard X-rays. He obtained, therefore, Laue crystal lattice patterns from electrons sent through films of aluminum, gold, and platinum. Thomson confirmed his results by showing that the rings conformed to known crystal structure, that the wave length is inversely as the momentum, and that the known spacing of atoms in the crystal permit computing the ring size.

The electron waves and light waves differ even when the wave length is the same. He quotes a brilliant guess of Newton as being close to the true explanation and he regards the electron as the reality and waves as being related to it.

Davissan and Germer's experimental attempt to polarize electron waves by reflection gave negative results.

Honda held that ferromagnetism was caused by high speed electronic revolutions in the nucleus of the atom. Radioactivity shows that such intra-nuclear electrons exist, revolving with nearly the speed of light. His computed values for the magnetic moment of the iron atom 2×10^{-20} , is close to the observed value. He states that the observed facts of ferro-, para-, and dia-magnetism follow from his theory.

Herzfinkel and Wertenstein attempted without success to accelerate the rate of radioactivity transformation. Braddick and Cave estimated that a gram of radium emits 3.7×10^{10} alpha particles per second—a higher value than that previously accepted. Experiments at the Reichsanstalt show that under bombardment one aluminum atom will disintegrate for each million alpha particles passing and one boron atom for each hundred thousand.

Using constants already otherwise known and more accurate values of the alpha particle energies, Enskog not only computes the nuclear proton structure but packing effects of the right magnitudes are obtained.

The continuous spectrum of the zodiacal light was photographed by Ramdas and showed prominently the 4227 Å absorption line of calcium. He obtained no record beyond 5000 Å, suggesting that the scattering is from matter in atomic or molecular state, and believes that the new effect of modified scattering may account for the apparently weak polarization and special character of zodiacal light.

In General Electric researches, "artificial lightning" was produced at a tension of 3,500,000 volts. The use of the cathode-ray high-speed camera permits the recording of lightning flashes, the surges of which find a maximum in ten-millionths of a second. Boys shows that a lightning discharge may start from ground and cloud at the same instant, meeting in mid-air. Breit and Tuve, using a Tesla oscillator in oil under high pressure, have produced 5,200,000 volts for use in research on the atomic nucleus and high-frequency radiation in the gamma-ray and hard X-ray range.

Crile before the National Academy of Sciences gave his experimental results on excitation, exhaustion, and death in terms of physical constants, showing that when the cell potential difference (between nucleus and cytoplasm) becomes zero, death ensues. This is an extension of his remarkable work in support of his bipolar theory of living processes; which applies as well to the potential difference between the bodily organs as to the positive cell nucleus and the negative cell cytoplasm.

A notable discovery of the year observed by Landsberg and Mandelstam and independently by Raman, is that if a monochromatic ray of light impinges on a substance it gives rise (in many cases), viewed transversely, to polarized wave lengths not in the incident beam but often spaced symmetrically on both sides of the spectral line of the incident beam. Many experimenters have studied the effect in quartz, water, benzene, ether, and other substances. Raman reported that the modified spectrum of monochromatic light diffused by fluids is a powerful and precise method for exploring molecular spectra in the infra-red, especially in the deep infra-red not hitherto accessible to spectral studies. For example, the mercury line 4358 gives in carbon tetrachloride three new frequencies corresponding to three computed (but hitherto unknown) infra-red lines in the carbon tetrachloride spectrum.

It appears that Landsberg and Mandelstam had detected changes in wave length when light is scattered by some transparent media, anticipating the first note by Raman on the subject. German workers reported that the characteristic basic vibration of the C-H group at 3.3 microns are found superposed on the incident light by all compounds tested. Not all the infra-red vibrations give rise to "modified scattering" lines, although all such lines from organic liquids can be referred to known infra-red vibrations. Venkateswaren gives results on the "modified scattering" effect which show that the transformation of monochromatic rays into general or white radiation is caused by the special state of molecular aggregation giving high viscosity. Morton adds that a wide glycerin band suggests that the broadening out of the modified lines to bands is caused by the OH group.

Typical of how band spectra disclose molecular structure is the analysis of the formaldehyde spectrum using the absorption bands in the ultraviolet. Henri and Schou thus find that the formaldehyde molecule is a Y, carbon at the centre, oxygen below, and the two hydrogen at the upper branches. The hydrogen and carbon monoxide furnish two sets of vibrational frequencies. The success of atomic physics in explaining obscure phenomena is well known. Milne states that ionized calcium atoms absorb strongly the powerful H and K radiation of the sun and are thus repelled at great speed into space. At low levels, however, atoms adjust themselves to levels at which radiation pressure and gravitational pull balance. Heavy calcium atoms are thus supported in deep layers. Russell points out that radiation from these intensely hot clouds (faculæ) drives the material into cooler regions (spots) giving the effect of suction or attraction. Calculations give 50 miles per second as the combined result thus attainable.

A new use was found for the polar regions of the earth by Russell who suggested that short

wave stellar spectra extending to 2100 angstroms could be obtained in the polar regions owing to the absence of ozone which strongly absorbs the ultraviolet. At 2100 angstroms, the absorption of oxygen begins. Experiments at Trömsö were planned to study the research possibilities of the polar regions.

The use of physics in biological research was notably increasing. The effect of continuous radiation on plants at the Boyce-Thompson Institute illustrates the astonishing results obtained. Arthur reports that rays a quarter-micron wave length produce lethal effects on tomato leaves in thirty seconds, while slightly longer waves produce no injury. Buckwheat grew steadily with continuous radiation. Applied physics is productive of new orders of phenomena, often unpredicted and of great significance. A great acceleration of growth and development of plants was reported by Goodspeed as a result of special kinds of X-ray treatment. The Smithsonian Institution in cooperation with the Fixed Nitrogen Laboratory initiated a research on the relation of radiation to plant growth and on the measurement of ultraviolet.

The use of X-rays in experimental evolution research reported last year has been extended to corn and barley. Professor Muller's X-ray spraying of fruit flies produced great numbers of gene mutations, speeding up to 150 times the normal rate the process of variation or production of new types of individuals by translocation of the chromosomes. British experiments on the ultraviolet irradiation of stock to counteract the dearth of sunshine showed that as compared with control stock the market value was increased fourteen times the cost of irradiation.

Slack developed a beta-ray tube as a general laboratory tool for the study of effects of such rays on living and mineral matter. A strong thin bubble permits electrons to emerge through a thickness of about one five-thousandths of an inch of glass. Among the first observations were interesting changes in color hitherto unknown in uncolored alkali metal salts irradiated with beta rays. A new resource was thus made available for physical laboratory research.

Boss attributed the measured variation in the day to the swelling and shrinking of the earth and correlated the change with variations in the rotation rate and earthquake frequency. *Nature* reports that tidal friction has increased the terrestrial day 0.0025 second per century during the past three centuries. The tidal drag on the earth is computed to be equal to a billion and a half horse power. A rhythmic increase and decrease about the mean value also occur, not, however, exceeding 0.0036 second deviation from the mean.

Wenner devised a precision seismometer with both optical and magnetic amplification. The magnification is about 1000. The minutes and seconds intervals being marked off automatically on the seismograph, the graphs are self-defining. Fine periodic rhythmic traces at all times are attributed to the beats of the ocean surf many miles away. Earthquake autographs of great smoothness are being recorded by this highly precise and sensitive seismometer.

Störmer reports radio echoes as high as 15 seconds after the signal, attributing them to reflections from streams of electrons from the sun at about 200 earth radii from the earth. Chapman states that this would require an electron density about 10^5 per cubic centimeter. Positive

ions must be present and the stream density would be about that of the solar chromosphere. If this is confirmed, the cause of such echoes being extra-terrestrial, it means that man has produced perceptible effects in space for the first time, namely, at distances of 800,000 miles. However, other investigators attribute the long period echoes to the gradient of electron density in the upper air according to which any time-interval between signal and echo may be expected to occur. Discussion is keen as to the true cause of these echoes. Stetson announced that the conditions at sun-spot maximum (late 1929) would mar radio reception.

Hurlburt shows that the ultraviolet ionizing of the upper air forms the Kenelly-Heaviside layer which makes possible long-distance radio. Pettit forecasts enhanced ultraviolet during the coming sun-spot maximum with accompanying tendency to sunburn.

Quartz for radio-frequency control develops interesting facts reported by Herber. For example, 0.141 inch thickness corresponds to 550 kilocycles. A 1000-kc crystal changes 100 cycles if only 9-millionths inch is removed, or may vary by 80 cycles per degree centigrade change in temperature. Hence, precise dimensioning and temperature constancy are necessary to control radio to frequency constancy of one or two parts in 100,000 as is now being accomplished in daily practice at the U. S. Bureau of Standards. In the Bell television system, Marrison stated frequencies were actually maintained in the most exacting work to a constancy of one part in ten million, requiring that the quartz oscillator be maintained at a temperature standard and constant to within 0.01 degree centigrade.

Millikan and Cameron's observations in the Andes showed that cosmic rays were independent of geographical position. At sea-level, thunder storms did not affect the cosmic rays, namely, the equivalent 1.4 ions per cubic centimeter per second. No effect was shown by the milky way compared with the plane perpendicular to it. Using Compton's formula for the wave length gives from 0.525 to 0.32 milliangstroms.

Rutherford pointed out that X-rays from radium have a quantum equivalent of 4,000,000 electron volts; that the total quantum from the hydrogen-helium transformation is 27,000,000 electron volts, and the proton itself represents an internal energy equivalent to 940,000,000 electron volts. He adds that possibly observed cosmic ray effects are explicable by high energy electrons entering our atmosphere quite as well as by mass-energy transformations. Millikan and Cameron hold that they indicate the synthesis or creation of common elements out of protons and electrons in interstellar space.

The absorption coefficient of the most penetrating rays deduced by Millikan and Cameron agrees with the Klein-Nishina relativistic form of wave mechanics for a quantum of 940,000,000-electron volts energy—the energy disseminated from the transformation of the internal energy of the proton into radiation. A billion-electron-volt transformation would account for the highest frequency ultrapenetrating rays observed. Skobelzyn, in studying the relative intensities of the gamma rays from radium C, noted trials of very energetic beta particles, caused, he believes, by ultrapenetrating radiation in our atmosphere.

Millikan and Cameron, after new observations and computations, using Einstein's mass-energy

equation, Dirac's absorption equation, and Aston's positive-ray measurements, conclude that cosmic rays are the result of the creation "in a single step" of such elements as helium (from hydrogen), oxygen (from hydrogen), silicon (from hydrogen). The three discrete groups of cosmic ray frequencies correlate with the three transformations as indicated by the close agreement of absorption coefficient computed and observed, respectively as follows: 0.30 and 0.35; 0.075 and 0.080; and 0.043 and .040. That the synthesis of iron is a fourth possibility is foreshadowed but not confirmed by preliminary results already obtained.

Appropos of a recent assertion by Nernst that astro-physics depends more than any other science upon daring hypothesis, may be cited Haldane's statement "if the present universe melts away into radiation, another equally improbable will develop in a period of years equal to ten with exponent 10^{100} " based on Hubble's estimate of 10^{81} as the lower limit of the number of existing atoms, and upon Jean's speculations on the exceeding improbability of a universe with as little entropy as our own, namely, $-10^{92.6}$ a probability of only 10 with exponent. Admittedly speculative, such serious discussions show a new freedom in physics which has come chiefly since the relativity theory was first announced.

The measured cooling rate suggests that the moon's surface is largely pumice or material with similar radiational properties. Pettit and Nicholson's measurements of the moon's temperature show that it attains 265 degrees Fahrenheit over 1600 miles square in sunlight and -196 degrees on the dark side. The high temperature agrees within error of observation with the value deduced by Coblentz from his own radiometric measurements some years ago.

Johnsrud measured films of rubidium as thin as one atom, finding that the maximum photoelectric effect is produced with a layer one-atom thick. In a General Electric research a "glass-cutting" alloy was developed called "carbolly" capable of machining glass or hard porcelain and showing twice the hardness of tool steel. Elman described the development of permivar showing a hysteresis loop constricted at the origin of coordinates, passing through the zero point. Muller's transparent steel films a few millionths of a millimeter thick had proven of such importance that films of other metals were being produced. A disk held between two rings ripples like a surface of water when blown upon. The slight mass permits tonal reproduction without distortion. Keyes discovered how to electro-deposit aluminum and Sheppard reported that the rubber particles used in the electro-deposition of rubber have a negative contact potential of 0.035 volts and a mobility of 2.7 microns per second. Rubber fillers may be mixed with the latex as colloidal suspensions and deposited with the rubber. Thick deposits may be built up since they are permeable.

The production of high-frequency or ultrasonic waves awakened new interest recently through the work of Wentz on the electro-static transmitter, of Hewlitt and his electro-dynamic oscillator, Hartmann and his air-jet oscillator, and Woods and Loomis with the quartz oscillator. Interesting effects of supersonants are reported, some of them attributed to heating effects. A vibrating glass thread held between the fingers causes burns. Small organisms such as

paramacia or even fish and frogs are killed, benzol is atomized into a fine mist, emulsions otherwise impossible may be produced, and dust figures of great delicacy and beauty are formed. Already research work is planned for the practical utilization of short-wave supersonants.

BIBLIOGRAPHY. The important books of 1928 are too many to be listed. Examples must suffice. Allen's *The Quantum and Its Interpretation* and Fowler's *Wave Mechanics and the Quantum Theory* are typical of quantum literature of great excellence. Joffe's *Physics of the Crystal*, Sosman's *Properties of Silica*, and Bragg's *Introduction to Crystal Analysis* are examples of the rich literature on crystal structure. Grotrian's *Graphische Darstellung der Spektren von Atomen und Ionen mit ein, zwei, und drei Valenzelektronen* was a great event in spectroscopy where the graphic method has been so illuminating. J. J. Thomson's *Beyond the Electron* opens up the next stage in the physics of the structure of matter and radiation. Leggett's three volumes on radiology: *Theory and Practice*, *Electrical Theory*, and *X-ray Apparatus and Technology* were real additions to the literature. Of more general physical literature may be cited Richtmyer's *Introduction to Modern Physics*, Eddington's forthcoming *The Nature of the Physical World*, Fitch's *Fundamentals of Physics*, and Searle's *General Properties of Matter*.

The Bureau of Standards *Journal of Research* was started in July, 1928, and completed its first volume in December. It is the outlet for the bureau's results in scientific and technical research. The progress of physics as shown in the journals may be followed in the rapidly increasing abstract literature *Science Abstracts*, *Physics Section*, *Chemical Abstracts*, and the *Technical Index*, all of which happily are more thoroughly than ever reviewing the research literature of the world.

The above summary is necessarily a mere bird's-eye survey of physical research during 1928, which would require a volume to describe. Time alone will reveal whether in those described or in those here passed over for lack of space lie potential the epoch-making discoveries which would enter into the physics of tomorrow. The trend of current physics was toward unlimited degrees of freedom for speculative physics as shown in relativity literature, in the development of precision measurements in all fields, and the application of automatic methods both for measurement and computation—all gratifying tendencies.

PIANISTS. See MUSIC.

PIGS. See LIVESTOCK.

PINE BLISTER RUST. See FORESTRY.

PINK BOLL WORM OF COTTON. See ENTOMOLOGY, ECONOMIC.

PINKHAM, THE RIGHT REV. WILLIAM CYPRIAN. Canadian prelate, died at Calgary, Alta., July 18. He was born at St. John's, N. F., in 1844. He was the oldest consecrated bishop in the Anglican communion in the world. Bishop Pinkham was educated at St. Augustine's Missionary College, Canterbury, England, and was admitted to the priesthood in 1869. He went to the then comparatively unknown country of Manitoba, as incumbent of St. James's, in 1868, and was one of the real pioneers of western Canada. He remained at St. James's until 1882, and in the meantime and until 1883, served as superintendent of education for the Protestant

public schools of Manitoba. From 1882 to 1887 he was archdeacon of Manitoba and canon of St. John's Cathedral, Winnipeg; in 1883-84, acting rector of All Saints' Church, Winnipeg; in 1882-87 secretary of synod; 1887-93, Bishop of Saskatchewan, and Bishop of Calgary from 1888 to 1926, when he retired. For a few months in 1913-14 he was also Bishop of Edmonton. The Archbishop of Canterbury conferred on him the degree of B.D. in 1880 and he was also an Honorary D.C.L. of Trinity University, Toronto, Ont., and of the University of California, and an honorary D.D. of the University of Manitoba.

PITAVAI, THE RIGHT REV. JOHN BAPTISTE. American Roman Catholic prelate, died at Denver, Colo., May 23. He was born in France, Feb. 10, 1858. He went to the United States in 1881 and was assigned to Colorado. In 1909 he was ordained Archbishop of Santa Fe, N. M., and he remained at the head of the archdiocese until 1918, when he was compelled by ill health to resign. From 1920 until his death he was chaplain of St. Anthony's Church, Denver, Colo. Archbishop Pitaval was a leader in the work of his denomination in the southwestern part of the United States for almost a half-century.

PITTSBURGH. See MUNICIPAL GOVERNMENT.

PITTSBURGH, UNIVERSITY OF. A non-sectarian institution of higher education for men and women, at Pittsburgh, Pa., founded in 1787. The total autumn enrollment for 1928 was 9960 (exclusive of extension and the 1928 summer session) distributed as follows: College, 2033; engineering, 384; mines, 94; business administration, 652; education, 1034; graduate, 905; medicine, 261; law, 279; pharmacy, 437; dentistry, 340; retail training, 22; downtown division, 2620; Johnstown centre, 262; Erie centre, 367; Uniontown centre, 270. The extension division had an enrollment of 1087, and the 1928 summer session, 2798. There were 851 faculty members, including 154 new appointments, as follows: business administration, 11; college, 78; education, 12; engineering, 8; mines, 2; dentistry, 1; law, 3; pharmacy, 5; medicine, 29; military department, 2; retail training, 3. The library contained more than 115,000 volumes. The productive endowment amounted to \$1,708,402, and the year's expenditures to \$3,022,768. Income from the Pennsylvania State Legislature amounted to \$414,799. Developments during 1927-28 included the establishment of the Uniontown Centre, at Uniontown, Pa., under the direction of the University Extension Division, and progress on the construction of the Cathedral of Learning. The following bequests were received: \$750,000 for the Falk clinic; \$50,000 for the establishment of a scholarship, bequeathed by Elbert H. Gary; \$5,000 for a scholarship, from Z. Bailey Ogden; \$9,000 for a trust fund, given by Solomon Rosenbloom; \$210,000 for a building by Gardner Steel; and \$90,000 for general endowment, by David L. Gillespie. Chancellor, John G. Bowman, LL.D.

PLACE, IRA ADELBERT. American railroad attorney, died at New York, Jan. 24. He was born at New York, May 8, 1854, and after studying at Alfred Academy, Alfred, N. Y., was graduated from Cornell University in 1881. He went to Buffalo, N. Y., and studied law, and was admitted to the bar in 1883. In the same year he entered the offices of the general counsel of the New York, West Shore & Buffalo R. R., and when the company operating that road

was reorganized three years later he entered the law department of the New York Central & Hudson River R. R., now a part of the New York Central Lines. In 1902 Mr. Place became general attorney for the New York Central & Hudson River R. R., and in 1905 he was appointed general counsel. On Dec. 5, 1906, he was advanced to vice president in charge of law, the land and tax department, and the claim department. During Federal control, 1919-20, he served as general solicitor, and then became vice president of the New York Central Lines. He was appointed senior law vice president in June, 1927. He was highly regarded as an outstanding expert in railroad law. He took a leading part in the development of Park Avenue, New York, from a shantytown and neglected district to one of the finest thoroughfares in the world. He was honored by Alfred University with the degree of LL.D., in 1924.

PLANETS. See ASTRONOMY.

PLANT DISEASES. See BOTANY.

PLANT PHYSIOLOGY. See BOTANY.

PLANT POISONING. See VETERINARY MEDICINE.

PLANT QUARANTINES. See BOTANY; ENTOMOLOGY, ECONOMIC; HORTICULTURE.

PLATE GLASS INSURANCE. See INSURANCE.

PLATINUM. During 1928 there was apparently an adequate supply of platinum available with the world production running in excess of consumption. The price of platinum, which opened the year at \$72 an ounce, advanced until a maximum of \$90 an ounce was recorded on January 16, after which the price declined steadily until at the end of the year it was \$74. Colombia continued the expansion of its facilities and various deposits were being worked involving dredging, with three dredges in operation by South American Gold and Platinum Co. In 1926 the production of crude platinum was approximately 46,000 ounces and the output increased rather than declined in 1927 and 1928. The production in Russia continued on about the same basis. In 1926 the output was estimated at 92,700 ounces; while for 1927 and 1928 a production somewhat in excess of that figure was indicated. The principal use of platinum in normal times is in jewelry and in 1927 it was estimated that about 70 per cent of the platinum and radium consumed in the United States was purchased by jewelers. In Canada the production of platinum in 1926 was stated at 9471 ounces, valued at \$919,347, obtained by the refining of nickel and copper ores in the Sudbury District of Ontario, and crude platinum obtained from placers amounting to 50 ounces. In the United States in 1927, crude platinum produced was 20 troy ounces from Alaska, 127 ounces from California, and 6 ounces from Oregon, or a total of 153 ounces.

The imports of platinum into the United States in the form of grains, nuggets, sponge, or scrap, during 1928, amounted to 98,349 troy ounces valued at \$5,294,668, as compared with 90,491 ounces valued at \$7,480,869 in 1927. Platinum ingots, bars, and sheets, or plates, amounting to 29,362 ounces valued at \$2,348,840, were imported in 1928, as compared with 38,053 ounces valued at \$3,707,062 which were imported in 1927. There were also sent to the United States in 1928, 686 ounces of platinum ores with platinum contents valued at \$49,094.

PLAYGROUND AND RECREATION ASSOCIATION OF AMERICA. An association organized in 1906 by Theodore Roosevelt, Jacob A. Riis, Luther Halsey Gulick, and others, for the purpose of binding together in a national body the efforts growing up in various parts of the country to provide safe and adequate areas where children might play under experienced leadership. A staff of field workers is maintained to assist cities in organizing year-round recreation programmes for children, adults, and the community as a whole, to strengthen existing programmes, and to help secure state legislation for facilitating the development of municipal recreation. Other phases include: An employment service for recreation workers and a correspondence and consultation bureau which answers letters of inquiry and holds personal conferences on local work. The community drama service of the association supplies practical suggestions and literature to amateur dramatic groups and prepares programmes for holiday and special day celebrations. The community music service assists in organizing music groups and in training volunteers and provides an exchange for community music information. The association also maintains a Bureau which gives assistance to Negro groups in securing recreation opportunities. A new development during the past year was the assignment, in coöperation with the U. S. Department of Agriculture, of a full-time worker to help in the training of rural leaders for recreation.

A national training school was established in 1926 to provide graduate courses in professional recreation training. The national physical education service of the association is active in sponsoring physical education legislation. The association publishes *The Playground*, a monthly magazine, and maintains a weekly bulletin service. Among the books published in 1928 were, *A Manual of Municipal and County Parks, Play Areas—Their Design and Equipment*, and a game book, *Recreational Games and Programs*. The fifteenth annual recreation congress of the association was held at Atlantic City, New Jersey, in October, 1928. The officers for the year were: President, Joseph Lee; treasurer, Gustavus T. Kirby; secretary, Howard S. Braucher. Headquarters are at 315 Fourth Avenue, New York.

PNEUMONIA, nū-mō'nī-ā. The Felton polyvalent serum was under consideration during the year, although it was by no means new. It was first given to the medical profession over four years previously and was at the time regarded as a promising one. In the meantime, however, it seems to have been ignored and health officers have stressed the need of specific sera for pneumonia due to the different micro-organisms, some of which are much more virulent naturally than others. Time is lost in making a bacteriological diagnosis and perhaps also in obtaining the particular serum indicated. A polyvalent serum should spare the patient this delay. Dr. Cecil, of the pneumonia clinic at Bellevue Hospital, New York, who had made trial of the serum originally developed by Dr. L. D. Felton, of Harvard University, announced that excellent results were obtained therewith. It is true that, although nominally polyvalent, it gave the best results in Types I and II, while those obtained in the deadly Type III were less favorable. But even if the Felton serum should not prove its superiority to the specific preparations when

taken collectively, it is still true that it can be applied much more promptly, so that the net advantage to the patient is considerable and therefore the serum in question may be regarded for the present as marking an advance.

THE QUININE TREATMENT. Quinine and its derivatives have for many years been put forward as of actual value in lobar pneumonia, and it is certainly unusual for a remedy to maintain a favorable reputation in such a treacherous malady for more than sixty years. The earliest reports in the United States were discounted by the fact that they proceeded from the malaria-ridden parts of the country, but new claims have constantly cropped out, especially since the introduction of synthetic derivatives of the drug. In 1905 the hypodermic use of quinine and its derivatives began and during the present year several eminent clinicians have advocated this method. Dr. John, of Mülheim, has used this resource in several hundred cases. The serum treatment he regards as indicated only in very recent cases, while quinine injections may favorably influence advanced cases and also seem to abort early cases in some instances. In the more advanced cases the pulse improves, the mind clears, and the patient loses his dusky look; but quinine appears to be of value only in pneumococcus cases, so that a bacteriological diagnosis is necessary. The treatment is safe and in many thousand injections Dr. John has seen but three accidents, only one of which seemed serious. He asserts that the action of quinine in the suitable case is so specific that it may not be necessary to make use of heart stimulants.

DIATHERMY TREATMENT. This method of treating pneumonia had been tested for over 6 years by Dr. H. E. Stewart of the United States Marine Hospital Service, reporting his experience since 1922. In the *Archives of Physical Therapy* for October, 1928, he gives his results to date along with those of others throughout the world who have given his method a trial. Apparently the latter has been used chiefly in desperate cases and in localities where the pneumonia death rate is high. The results have been so striking that the writer has some diffidence in making them public, knowing that the history of pneumonia treatment is full of fallacies. His own mortality figure is about 12 per cent and a survey of all the published reports reveals that when the treatment is begun the first or second day, the mortality is almost nil. Thus a remedy put forth at first only for the relief of pain and distress seems destined to compete with and perhaps surpass the best modern management. Naturally, such treatment can be carried out only under certain conditions not available for the great mass of the people.

POETRY. See LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE; ITALIAN LITERATURE; SCANDINAVIAN LITERATURE; SPANISH LITERATURE; PHILOLOGY, MODERN.

POHLIG, KARL. A German orchestra conductor, died in Brunswick, in July. He was born in Teplitz, Feb. 10, 1864. After completing his musical education under Liszt, he began his career as a concert pianist, making successful tours of Germany, Austria, Russia, Scandinavia, and Italy. In 1895 he became assistant-conductor to Mahler at the Vienna Hofoper, directed the German operas at Covent Garden in 1897-98,

and then was appointed first conductor at the Hoftheater in Koburg. From 1900-1907 he was in Stuttgart as conductor at the opera and of the symphony concerts. The next five years he spent in the United States, directing the Philadelphia Symphony Orchestra. Returning to Germany, he settled in Brunswick as conductor at the ducal opera and of the symphony concerts, was made general musical director in 1916 and retired in 1924. He wrote a symphonic poem, *Per Aspera ad Astra*, and several choral works.

POISON GASES. See CHEMISTRY, INDUSTRIAL; MILITARY PROGRESS.

POLAND. A European republic formed as a result of the World War and comprising the territory formerly divided among the three governments, Austria-Hungary, Russia, and Prussia, from the three partitions of Poland in 1772, 1793, and 1795, which were confirmed by the Congress of Vienna in 1815. After the World War (1914-18), Poland, in addition to this original territory known as Congress Poland, acquired Prussian Poland, Polish Galicia, Upper Silesia, and a portion of the Vilna territory. Capital, Warsaw.

AREA AND POPULATION. The total area, according to recent estimates, is 149,958 square miles, and the population, according to the first official census of the Polish Republic in 1921, 27,176,717; estimated in 1927, 29,589,000. The largest cities with their populations at that census were: Warsaw, 936,713; Lodz, 451,974; Lvov, 219,388; Poznan, 184,756; Cracow, 183,706, and Wilno, 128,954. The Polish nationality represents two-thirds of the population and is followed in numerical order by the Ruthenians and Jews.

EDUCATION. Primary instruction is free and compulsory and all other grades of education are free. In 1927 there were 26,775 elementary schools with 69,360 teachers and 3,365,235 pupils; 780 secondary schools with 14,733 teachers and 216,552 pupils; 195 colleges for teachers with 1931 teachers and 34,437 pupils; and 850 technical and professional schools with 110,000 pupils. The universities and institutions of university rank numbered 16 with 950 professors and 36,590 students.

PRODUCTION, ETC. Agriculture and stock raising are the two principal occupations of the country engaging about 65 per cent of the people. In 1926 there were in Poland 45,239,000 acres of arable land, or 47 per cent of the total area, 15,732,000 acres of permanent meadow and pasture, and 22,392,000 acres of woods and forests. On Jan. 1, 1928, there were 8,571,000 cattle, 6,397,000 swine, 1,917,000 sheep, and 4,128,000 horses. With regard to agriculture, 1927 was one of the best years of the post-war period. The combined output of wheat, rye, barley, and oats, the most important crops apart from potatoes, exceeded that of 1926 and the average for the preceding five-year period by 11 and 12 per cent, respectively. The higher output was owing to favorable weather, and, to a considerable degree, also to greater use of fertilizers and better tillage, as there was practically no increase of the sown area over the preceding year. The area under cultivation in all crops has almost reached the pre-war maximum, making further expansion possible only by draining the marshes, especially in the eastern part of the country, and by encroaching upon the forests. Intensive farm-

ing and the development of production of more valuable commodities, such as eggs, butter, live animals, meat products, have been fostered lately by agricultural organizations. The following table from the COMMERCE YEAR BOOK for 1928 gives the area and production of the principal crops:

Crop	Area (thousands of acres)	Production (thousands of units—bu., and as indicated)	
		1927	1927
Wheat	2,814	54,229	
Rye	12,081	223,944	
Barley	3,063	75,060	
Oats	6,475	233,551	
Corn	196	4,043	
Potatoes	5,946	1,166,891	
Sugar beets	489	3,620 "	
Linseed	271	3,039	
Flax		148,812 "	

" Unit, metric ton.

" Unit, pound.

Though agriculture is the major industry of Poland, mining and manufactures are of much and growing importance. The number of industrial workers in the principal groups of industry was as follows in December, 1927: Mines, 144,186; metallurgy, 57,569; manufacturing, 518,549. Of the last group the most important were workers in nonmetallic mineral products, 47,404; metals, 87,799; chemicals, 33,432; textiles, 170,566; wood, 45,456; foodstuffs, 75,586. Industrial production for 1927 included: Coal, 38,016,000 metric tons; crude petroleum, 5,309,000 barrels; petroleum products, 618,912 metric tons; natural gas, 454,139,000 cubic meters; pig iron, 618,000 metric tons; steel, 1,248,000 metric tons; zinc, 149,856 metric tons; lead, 27,600 metric tons; potash, 276,000 metric tons; salt, 378,000 metric tons; and refined sugar, 537,268 metric tons. The sagging tendency in the output of crude oil continued in 1927, with a decline of about 10 per cent in gross production, as a result of the diminished yield of some of the old wells in the principal oil fields. There was greater activity in drilling operations during 1927, the number of new wells completed having increased to 167, against 112 in the preceding year. The Government is actively pushing for the discovery of new oil territory.

COMMERCE. Foreign trade operations for 1927 closed with an adverse balance of 221,151,000 gold francs—imports at 1,680,530,000 and exports at 1,459,000 gold francs. These figures compare with 896,232,000 gold francs of imports and 1,306,040,000 gold francs of exports in 1926 and a resultant favorable balance of 409,808,000 gold francs.

Preliminary trade statistics for 1928 indicated an adverse balance greater than that of 1927.

FINANCE. State revenues and expenditures for 1927-28 reached a record of \$310,555,000 and \$280,927,000, respectively, leaving a surplus near \$30,000,000. Receipts and disbursements exceeded by 39 per cent and 26 per cent, respectively, the revised budgetary estimates for the year. The marked improvement was due to a general increase in taxes and revenues from State enterprise and monopolies, as a result of enhanced buying capacity of the people. As a part of the plan of currency stabilization, it had been proposed to create additional revenues

of about 300,000,000 zlotys, but the growing receipts from existing sources made these revenues unnecessary. The budget for 1928-29 provided for revenues of \$283,384,000 and expenditures of \$278,073,000. The project of the budget for 1929-30 submitted by the Minister of Finance to the Diet, carried a total of 2,809,900,000 zlotys of anticipated revenues, and 2,802,000,000 zlotys of proposed expenditures, representing increases of 154,000,000 and 326,000,000 zlotys, respectively, over the budget for 1928-29 as finally passed by the Diet and the Senate on June 20, 1928. The proposed expenditures include about 400,000,000 zlotys of investments for construction and improvements, exclusive of appropriations for investment expenditures by the state railroads, totaling 336,000,000 zlotys for construction of new lines and for rolling stock. The total public debt on Jan. 1, 1928, was \$466,690,000.

PRINCIPAL ITEMS IN POLISH FOREIGN
TRADE, 1926 AND 1927
[In million gold francs]

Commodity	1926	1927
PRINCIPAL IMPORTS		
Grain	22	182
Fruits, nuts	14	24
Tea, coffee, and cocoa	31	39
Edible fats and herrings	38	67
Hides and leathers	46	88
Plants and seeds	11	19
Construction materials	10	22
Mineral ores	32	61
Asphalt, etc.	4	9
Rubber tires	4	9
Inorganic chemicals, mostly fertilizers	22	45
Tanning materials, technical oils, greases, etc.	66	92
Dyes and colors	8	16
Metals and metal goods	45	108
Motors, pumps, dynamos	12	24
Metal and woodworking machinery	3	9
Textile machinery	7	27
Agricultural machinery	8	20
Heating installations	6	12
Electrical apparatus and supplies, including radio	27	43
Bicycles	2	7
Automobiles	10	28
Paper and paper products	23	45
Cotton and waste	156	171
Cotton thread and cloth	28	46
Wool and wool yarn	73	133
Wool cloth	4	8
Silk thread and cloth	13	25
PRINCIPAL EXPORTS		
Grain	90	21
Live animals	59	105
Meats, butter, eggs	123	153
Sugar	84	76
Fodder	28	40
Timber and lumber	207	368
Coal	252	199
Petroleum products	75	51
Metals	132	160
Cotton cloth and yarn	38	47

COMMUNICATIONS. The entire railway system in Poland is owned by the State, with the exception of short narrow-gauge railways connecting Warsaw with the near-by towns and summer resorts. The state, however, was systematically buying these railways from the private owners. The total length of railways in Poland at the end of 1926 was 11,986 miles. No later statistics were available than those given in the YEAR BOOK for 1927.

During 1927, 530 vessels of 423,000 tons entered at the port of Gdynia and 519 of 416,000 tons cleared; at Danzig 6950 vessels of 3,900,000 tons entered and 6942 vessels of 3,933,000 tons cleared. Gdynia had been partially open to traffic since 1927 and was the newest

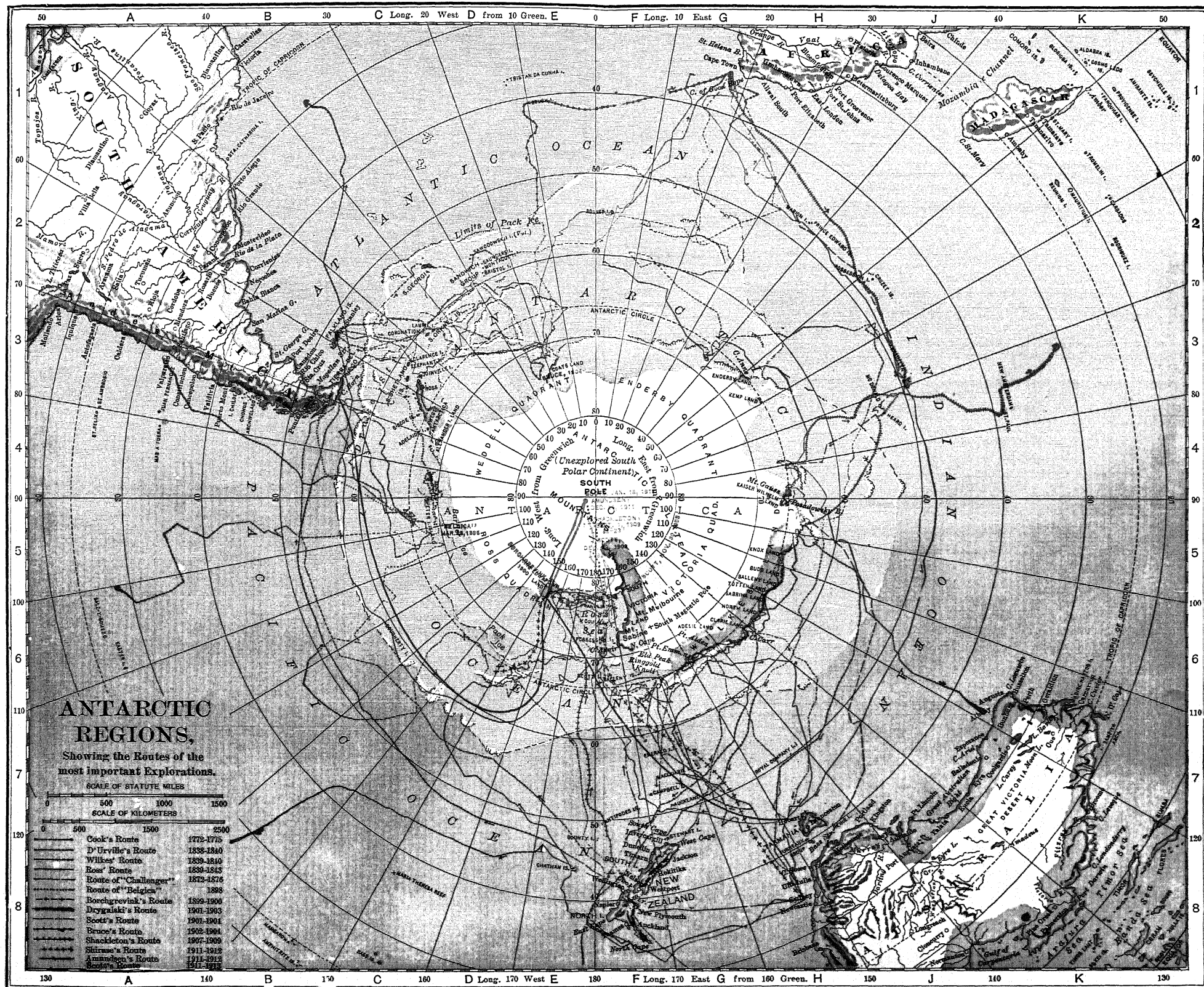
port on the Baltic. Construction on the port was begun in 1921. The site selected was absolutely virgin in state, so that the expansion of the port might follow its natural course unhampered and in accordance with up-to-date principles of port construction. See PORTS AND HARBORS.

GOVERNMENT. Under the constitution adopted Mar. 17, 1921, executive power is vested in the President, chosen by both houses of the National Assembly for a period of seven years; and legislative power is vested in the National Assembly, consisting of a Senate of 111 members and a Diet (444 members), called the Sejm, both elected by universal suffrage. President in 1928, Ignace Moscicki, elected June 1, 1926. The cabinet was composed as follows: Premier and Minister of War, Joseph Pilsudski; Deputy Prime Minister, Casimir Bartel; Foreign Affairs, August Zaleski; Finance, Gabriel Czechowicz; Justice Alexander Meysztowicz; Interior, Slawoj Skladkowski; Commerce and Industry, Eugene Kwiatkowski; Agriculture, Charles Niezabutowski; Agrarian Reform, Witold Staniewicz; Communications, Vincent Romocki; Labor and Social Affairs, Dr. Jurkiewicz; Public Works, Andrew Moraczewski; Education, Dr. Gustaw Dobureki; Posts and Telegraphs, Bogustaw Miedzicki.

HISTORY. Compared with 1927, the year 1928 was one of comparative quiet for Poland. Of course, the perennial struggle with Lithuania was to the fore from time to time, but the year closed with the question further from settlement than when it began. See LITHUANIA. Elections for the national Parliament were held in March. More than two thousand candidates, representing all shades of political belief, ran for the 454 positions. It was expected, of course, that Marshal Pilsudski would retain a sufficient control over the membership to maintain himself in power. This actually occurred, although when the new Parliament met, the Marshal was compelled to accept the defeat of his own personal candidate for the position of President. The seat was won by a Socialist, although Pilsudski appeared to accept this rebuff in good spirits. During the summer, Pilsudski's smooth path was rather ruffled. In May he was seriously ill and was unable to attend to the business of state, and the opposition party in the Parliament took this occasion to break up his majority bloc. This was accomplished by the disaffection of the conservative elements, who had supported him up to this point. He returned to his desk in the latter part of June and almost immediately prorogued Parliament. He attacked his cabinet for permitting the control of Parliament to escape from their hands, with the result that on June 26 most of his cabinet resigned. Curiously enough, he resigned himself on the following day. M. Bartel became Premier and Pilsudski accepted the position of Minister of War. Of course, most observers believed that Pilsudski's action was merely a sham to cover some future plan he had in mind. When conditions went on as before and no radical changes were brought about, it was quite evident that the "dictator" was still at the helm. Conditions remained in the *status quo* for the remainder of the year. See JEWS.

POLISH LANGUAGE AND LITERATURE. See PHILOLOGY, MODERN.

POLAR RESEARCH. The most significant Arctic expedition of 1928 was the twenty-and-



one-half-hour flight of Captain Sir Hubert Wilkins from Point Barrow, Alaska, to Dead Man's Island, Spitzbergen (Svalbard). Following a previously plotted course just to the north of the Canadian Arctic Archipelago, good visibility enabled him to reduce considerably the extent of unexplored area between North America and the North Pole. During the flight, observations were made on meteorological, ice, and navigation conditions. Wilkins accomplished the three objectives of his expedition; the search for new land—of which none was found; study of the feasibility of establishing a meteorological station in the Far North; and proof of the efficiency of the airplane in high latitudes.

Kings Bay, Spitzbergen, served as the base for the dirigible *Italia* which made three polar flights in May under the command of General Nobile. The first trip, to Franz Josef Land, was curtailed because of fog; the second was over unexplored territory in the vicinity of Northern Land; on the third flight, which reached the North Pole, the *Italia* was wrecked just north of Cape Leigh Smith, Northeast Land. Two weeks later, communication was established between the *Citta Di Milano*, base ship for the expedition, and the occupants of the main gondola which had been torn away from the bag when the airship first crashed. Finnish, French, Italian, Norwegian, Soviet, and Swedish rescue expeditions were organized and on July 12 the Soviet icebreaker *Krassin* reached the marooned men. Previously, Nobile was rescued by the aviator, Chukhnovsky, and Dr. Finn Malmgren lost his life in an attempt to reach land with two Italian companions who were later taken aboard the *Krassin*. Further search failed to reveal other traces of the *Italia* or of the six men who had been carried away with it. In all, eight of the crew were rescued, eight were lost, and Captain Roald Amundsen and five others disappeared while flying to the rescue of the Italians. The scientific results of the expedition are in course of preparation.

The International Society for the Exploration of the Arctic Regions by means of the airship is making plans for extended explorations with the *Graf Zeppelin* under the leadership of Fridtjof Nansen. It is planned to erect one mooring mast in Alaska and another in Russia thus giving the ship a wide cruising radius. The first number of *Arktis*, the official publication of this Society, was issued in 1928.

In the American Arctic, Davis Strait was visited by an expedition from the Danish Hydrographic Office. In the same region, the U. S. Coast Guard cutter, *Marion*, carried out extensive oceanographic and iceberg studies. The Canadian Government steamer, *Beothic*, made its regular inspection visits to points on Baffin Island and Ellesmere Island for the purpose of relieving the Far North stations of the Royal Canadian Mounted Police and of determining the condition of the natives. Major Burwash went north for the purpose of checking the North Magnetic Pole. The Forsild brothers continued their survey of wild life, the conservation of which is vital to the well-being of the natives of the Canadian Arctic Archipelago.

In Greenland, the University of Michigan Expedition under Professor Hobbs completed a year's study of meteorological conditions and their relation to world weather. At Angmassalik, the Rumanian Greenland Expedition under Dr.

Dumbrava spent ten months making observations similar to those of the Hobbs Expedition. The Oxford University Expedition to Greenland continued its biological studies under Dr. Longstaff.

The Norwegian Government established a central institution for the exploration of Svalbard. Plans for all expeditions were to be passed on as to the value of the proposed work and the fitness of the expedition.

In the Siberian Arctic, a number of expeditions under the Soviet Academy of Sciences have pursued studies of the natives and natural resources of the country. Efforts to relieve a colony established in 1926 on Wrangell Island have been unavailing due to the ice conditions.

At the end of 1928, the Byrd Antarctic Expedition, after a successful traverse of Ross Sea, was establishing in the Bay of Whales a base for extended exploration of the Antarctic Continent. The men and equipment of this expedition left the United States in the *City of New York* which sailed from New York on Aug. 25; in the *Eleanor Bolling* which cleared from Hampton Roads the middle of September; and in the whaler, *Larson*, which left San Diego on October 12. The expedition was reunited at Dunedin, New Zealand, whence the *City of New York* became the sole transport. Commander Byrd had before him the largest extent of unexplored land in the world, the possibility of conquering the South Pole by air, and the opportunity of making valuable contributions to our knowledge of the geology, biology, topography, and meteorology of the Continent.

The Antarctic expedition of Captain Sir Hubert Wilkins differs from that of Commander Byrd. Wilkins and three companions shipped their two planes and modest equipment to Montevideo, Uruguay, whence they left for Deception Island, Graham Land, on board a whaler. On December 19, Wilkins made a perilous take-off from Deception Island and flew south through Graham Land. His observations at this time were of greatest importance since they showed that Graham Land is separated from the main mass of the Antarctic Continent by a number of ice-filled depressions. The chief objective of the expedition is a flight from Graham Land for 2000 miles along the unexplored edge of the supposed Antarctic Continent to Ross Sea. The significance of such a flight lies not only in its reconnaissance value but also in the contribution which it may make to our knowledge of world weather. Wilkins feels that as aerial transportation becomes more and more common, meteorological stations must be established at key points, one of which will probably be in the region he plans to traverse.

An interesting work, *The Polar Regions in the Twentieth Century: Their Discovery and Industrial Evolution*, by General A. W. Greely, U.S.A., Ret., for many years a contributor to the *YEAR BOOK*, was published during the year.

POLITICAL AND SOCIAL SCIENCE, AMERICAN ACADEMY OF. A forum for the discussion of social, industrial, political, and economic topics, founded in Philadelphia, Dec. 14, 1889, and incorporated Feb. 14, 1891. Meetings are held throughout the year at which subjects of national and international interest are discussed. The thirty-second annual meeting, which was held May 11 and 12, 1928, considered the general subject: "Some Aspects

of the Present International Situation." Other meetings conducted during the year discussed the following subjects: "Local Taxation," "The Reconstruction of Belgium," and "Freedom of Speech in the United States." *The Annals* is published bimonthly as the official organ of the Academy, each issue being devoted to a study of a particular topic of economic, political, or social importance. In 1928 the following volumes were issued: "Great Inland Water-Way Projects in the United States," "Progress in the Law," "Standards in Industry," "Some Aspects of the Present International Situation," "Stabilization of Commodity Prices," and "The American Negro." The officers in 1928 were: President, Dr. L. S. Rowe; secretary, Dr. J. P. Lichtenberger; treasurer, Charles J. Rhoads; and vice presidents, Dr. Ernest Minor Patterson, the Hon. Herbert C. Hoover, and Dr. Charles E. Merriam. The address of the Academy is 3622 Locust Street, West Philadelphia, Pa.

POLITICAL ECONOMY. Subjects in the field of economics are treated in this volume under the following heads: BANKS AND BANKING; BUSINESS REVIEW; FINANCIAL REVIEW; CHILD LABOR; COÖPERATION; LABOR; LABOR ARBITRATION AND CONCILIATION; LABOR LEGISLATION; MATERNITY PROTECTION; MINIMUM WAGE; OLD-AGE PENSIONS; STRIKES AND LOCKOUTS; UNEMPLOYMENT; WOMEN IN INDUSTRY; WORKMEN'S COMPENSATION. See also such articles as: CHILD WELFARE; LABOR, AMERICAN FEDERATION OF; STATISTICS; SOCIALISM; TRADE UNIONISM; WELFARE WORK.

See also the articles on AGRICULTURE, the various crops, etc. Further discussions are to be found in articles on the several industries, minerals, public utilities, etc., and in sections on economic conditions in the articles on the individual countries. Books on political science and economics for the general reader are noted in LITERATURE, ENGLISH AND AMERICAN, paragraph, *Economics and Politics*.

POLITICAL SCIENCE, ACADEMY OF. A national institution for advancing the political sciences and promoting their application to public problems; founded in 1880 in New York City, and incorporated in 1910 under the membership corporation law of the State of New York. On Dec. 31, 1928, it had 6853 members, of whom ten were honorary members, 215 life members, and approximately 1100 subscribing members, chiefly libraries and organizations. All States in the Union, the District of Columbia, Porto Rico, Hawaii, the Philippine Islands, and leading foreign countries are represented in both the individual and subscribing memberships. Two general meetings were held in 1928. The semi-annual meeting was held on April 11, at the Hotel Astor, New York, to discuss "Fact-finding in Labor Disputes." Three sessions were held dealing with (1) Courts or Voluntary Agencies; (2) Trade Union and Employee Representation Plans; (3) Present Needs in Industry. The papers and addresses, with some additional material and a prefatory note giving some account of the meeting and information concerning the speakers, were published in *The Proceedings*, vol. xiii, No. 1, under the title, "Fact-finding in Labor Disputes," June, 1928.

The annual meeting, held November 23, was devoted to the subject, "The Preservation of Peace." Three sessions were held as follows: (1) The Renunciation of War as an Instru-

ment of National Policy; (2) New Uses for the Machinery for the Settlement of International Disputes; (3) The Pact of Paris. The papers and addresses prepared for the meeting were published in *The Proceedings*, vol. xiii, No. 2, published January, 1929, together with some account of the meeting. Four issues of the *Political Science Quarterly*, the official organ of the Academy, were published during the year. The officers for the year were: Samuel McCune Lindsay, president; Albert Shaw and Paul M. Warburg, vice presidents; Parker T. Moon, secretary and editor of the publications; George A. Plimpton, treasurer; and Ethel Warner, executive secretary and assistant treasurer. The headquarters are in Fayerweather Hall, Columbia University, New York City.

POLITICS, INSTITUTE OF. Formed for the discussion of foreign affairs, so as to promote a more sympathetic understanding of the problems and policies of other nations, these annual sessions were inaugurated by the trustees of Williams College in September, 1919. The first session of the Institute was held at Williamstown, Mass., in the summer of 1921. Membership is open to men and women on the faculties of colleges and universities, to writers on foreign politics, to persons engaged in the direction of foreign commerce or banking, to diplomatic and consular officials, to officers of the Army and Navy, to editors, foreign correspondents of the press, and, by invitation, to others who have had training and experience in international law and politics. In 1924 the General Education Board and the Carnegie Corporation joined with Bernard M. Baruch, who had made the first three meetings possible, in financing the movement for a five-year period.

The eighth session of the Institute of Politics met in Williamstown, Mass., Aug. 2-20, 1928. Addresses were delivered by Count Carlo Sforza, former member of the Italian Senate, on "The Responsibilities for the World War: Personal Recollections"; Dr. Chao Chu Wu, Former Secretary of Foreign Affairs of the Nanking Government, on "The Domestic and Foreign Programme of the Kuomintang"; Dr. Y. C. James Yen, leader of the Mass Education Movement in China, on "The Task of Educating China's Millions for Citizenship." Lecture courses were also conducted as follows: "Modern Turkey and its Problems," by Halide Edib Hanum, leader of the feminist movement in Turkey; "Germany's Foreign and Domestic Policies," by Dr. Otto Hoetzsch, member of the Reichstag and Professor of History at the University of Berlin; "Current Political Problems in Belgium," by Dr. Louis Pierard, Member of the Belgian Parliament and Reporter of the Budget of the Ministry of Foreign Affairs; "Means of Social Direction," by Dr. Graham Wallas, Professor Emeritus of Political Science at the University of London.

The following is a list of the Round-Table subjects with their respective leaders: "The Problems of the Pacific," George H. Blakeslee, Clark University; "Protection of Citizens Abroad," Edwin M. Borchard, Yale University; "Inter-American Economic and Commercial Relations," Harry T. Collings, University of Pennsylvania; "Agriculture and the Agricultural Surplus: An International Approach," Charles R. Fay, University of Toronto; "Recent Inter-American Relations and Problems," Charles W.

Hackett, University of Texas; "Modern Turkey and its Problems," Halide Edib Hanum, London; "Population Problems on the Pacific Rim," Roderick D. McKenzie, University of Washington; and "Social Direction," Dr. Graham Wallas, London School of Economics. There were also four general conferences devoted to "Problems of Africa," and conducted by Dr. Raymond L. Buell, of the Foreign Policy Association; and general conferences on "The Kellogg Treaties" and "Prohibition."

There were 218 members in attendance at the 1928 meeting, representing 27 states and 10 foreign countries. The Institute publishes an annual report including an outline and selected bibliography for each of its conferences, and a summary of all the main ideas developed by the conference leaders, lecturers, and members of the Institute. Copies of these publications may be obtained from the office of the Secretary, 1 Hopkins Hall, Williamstown, Mass. The ninth session of the Institute of Politics was set for Aug. 1-30, 1929. The officers of administration in 1928 were Harry Augustus Garfield, chairman; Walter Wallace McLaren, executive secretary; and Willard Evans Hoyt, treasurer. Headquarters are at 1 Hopkins Hall, Williamstown, Mass.

POLO. A series of international matches between the United States and Argentina featured polo in 1928. These contests played at Meadow Brook, Westbury, L. I., September 29, October 3, and October 6 aroused intense enthusiasm and were attended by more than 100,000 persons. The third and deciding match won by the United States attracted a crowd of more than 40,000, the greatest throng that ever witnessed competition in this sport. The American team in the first and second struggle was composed of W. A. Harriman, Thomas Hitchcock, Jr., Malcolm Stevenson, and F. W. C. Guest. The Argentinian line-up in all three matches comprised Arturo Kenny, Jack D. Nelson, John B. Miles, and Lewis L. Lacey.

The opening contest resulted in a victory for the United States players by the close score of 7 to 6, a sensational goal by Harriman in the last chukker deciding the outcome. The Argentinians captured the second game rather easily by a tally of 10 to 7. Following this reverse, the United States team received a thorough "shaking up," Earl A. S. Hopping being placed at No. 2 and Hitchcock being shifted from No. 2 to No. 3. The revised United States line-up, composed now of a quartet of youngsters, swept through to a thrilling victory, scoring ten goals in a row for a total of 13 to 7.

The open and Monty Waterbury Cup tournaments were pushed into the background by the international clash. A four, comprising C. V. Whitney, F. W. C. Guest, John B. Miles, and Malcolm Stevenson, captured the open series, defeating a Sands Point four led by Thomas Hitchcock, Jr., by one goal. The associates of Hitchcock were W. A. Harriman, E. T. Gerry, and Stewart B. Inglehart, Jr. Hitchcock's team, however, won the Monty Waterbury Cup final from the Army four by 13 to 11.

Yale took the intercollegiate outdoor title for the second successive year but lost the indoor crown to the Pennsylvania Military College by a score of 7½ to 6½.

POPE PIUS XI. See ROMAN CATHOLIC CHURCH.

PORCUPINE. See *Mammals* under Zoölogy.

PORK. See LIVESTOCK.

PORTLAND CEMENT. See CEMENT.

PORTO RICO, pór'tō-rēkō. An island possession of the United States in the West Indies; the most easterly and the smallest but most densely populated of the Greater Antilles; lying 480 miles east of Cuba, 1380 miles southeast of New York. Capital, San Juan.

AREA AND POPULATION. The area of the island is 3435 square miles and the population, according to the census of 1920, 1,299,809. On June 30, 1928, the population was officially estimated at 1,454,047, or 425 per square mile, about 27 per cent of whom live in cities. The movement of population in 1928 was: Births, 53,085; deaths, 29,682; marriages, 10,376. The capital, San Juan, had a population of 70,707 in 1920, estimated in 1928 at about 100,000. Other important towns are Ponce (41,561) and Mayaguez (19,069). Later estimates for population credited Ponce with about 77,000 and Mayaguez with about 50,000.

EDUCATION. Elementary education is free and compulsory between the ages of 8 and 14. According to the Governor's annual report for the fiscal year 1928, in the publicly supported schools of all grades under the Department of Education, there were employed 4478 teachers. The total enrollment for the year was 220,940. Of this number, 127,930 were enrolled in the rural schools, 86,083 in the elementary urban schools, 6790 in the secondary schools, and 137 were special students. In addition to those enrolled in the public schools, 7365 were enrolled in private schools. The total expenditure for educational purposes by the Department of Education was \$4,328,890. In addition, \$1,505,576 was disbursed by municipalities from their own funds. The total amounted to \$5,834,467. Of this amount \$37,250 was expended for high-school education, and the remainder for elementary education. The University of Porto Rico had an enrollment of 3404 in all its various schools in 1927-28.

PRODUCTION, ETC. Porto Rico is dependent upon sugar production for its prosperity, but other important products are tobacco, coffee, fruits, and articles of hand needlework. Although sugar is not so important an item in Porto Rico as it is in Cuba, economic and commercial conditions largely follow the trend of this commodity. The crop of sugar in 1928 was the largest ever produced in the island, 748,677 tons, as compared with 629,133 tons in 1927. Sugar prices continued low, however, throughout the year, the money value of the total amount exported being \$54,579,020, which was only slightly smaller than the total of the preceding year which was \$54,756,984. There was a marked increase in the production of sugar during four years. The four-year average for 1925-28 was 660,365 tons, while the preceding 10-year average was only 440,293 tons. This was an increase of about 50 per cent with no material increases in acreage. The increases were obtained in great part by varietal selection and the successful control of cane diseases.

The tobacco crop of the year was less than normal, but the prices received were much better than the preceding year. The crop of 1927-28 was only 22,000,000 pounds and the amount exported was valued at \$20,777,937. The crop of 1926-27 was 50,000,000 pounds, but the amount received

was only \$24,860,072. The coffee crop of the year was the lowest in amount produced during the last 30 years. The exports amounted to only 7,837,800 pounds valued at \$2,596,872. The amount exported the previous year was 19,353,581 pounds, with a value of \$5,747,932. The cause of the falling off of the crop was principally due to the severe storm of 1926, which seriously impaired the vitality of the coffee trees. The production of fruits showed an important increase during the year. The total value of fresh and canned fruit exported was \$7,538,794, while that of the previous year was \$6,451,947. The most important fruits are grapefruit, pineapples, and oranges.

COMMERCE. The growth of trade between Porto Rico and the United States and with foreign countries is shown in the accompanying table:

	1900	1914	1924	1928
Brought from United States	\$6,952,114	\$32,568,368	\$80,590,021	\$79,743,088
Shipped to United States	3,350,577	34,423,180	80,754,975	96,662,619
Brought from foreign countries	3,037,391	3,838,419	8,779,603	12,599,241
Shipped to foreign countries	3,261,922	8,679,582	7,525,565	6,872,120
Totals	\$16,602,004	\$79,509,549	\$177,650,164	\$195,877,068

The table shows the steady growth of the commerce of Porto Rico. The total external trade in 1900, two years after the American occupation, was only in round numbers, \$16,000,000. In 1928 it was \$195,877,068. The increase in shipments from Porto Rico to the United States was from \$3,000,000 to \$96,000,000. The increases of purchases by Porto Rico from the United States was from \$6,000,000 to \$79,000,000. The purchases of Porto Rico from foreign countries increased four times; from the United States, thirteen times. The sales of Porto Rican products to foreign countries increased two times; to the United States, thirty-two times. Ninety per cent of all the trade of Porto Rico is with the United States. The decline in value of the exports from 1927 to 1928 was in part due to the low price of sugar. Another contributing factor was the falling of coffee exports. The four principal products produced in and exported from Porto Rico are sugar, tobacco, coffee, and fruits. See above, under *Production*.

FINANCE. The actual cash receipts of the Insular Government for the fiscal year 1927-28 amounted to \$12,446,219. This was the largest amount ever collected in Porto Rico, and exceeded by \$1,087,394 the amount collected the preceding year. It also exceeded the treasurer's revised estimate by the sum of \$165,219. The total amount of receipts and expenditures from whatever source is shown in the following table:

<i>Receipts</i>	
Cash balance on hand July 1, 1927	\$ 128,257
Revenue receipts	12,446,219
Non-revenue receipts	2,968,335
Total	\$15,542,811
<i>Disbursements</i>	
Appropriations	\$10,762,822
Repayments, etc.	2,688,086
Redemption bonds	52,500
Asphalting of roads	58,000
Capitol and Park	104,500
Floating debt	1,117,104
Total	\$14,784,013
Cash balance on hand	\$758,797

It will be noticed that after paying in full all the obligations of the year, and paying \$1,117,104 on the floating debt, which was incurred by reason of loss of revenue caused by litigation preventing the collection of taxes, there remained a cash balance on hand at the close of the year of \$758,797. The bonded indebtedness of the Insular Government on June 30, 1928, was \$25,517,000 as compared with \$22,517,000 on July 1, 1927. The increase was due to public improvement and irrigation bonds.

LEGISLATION. The regular session of the legislature met on February 13 and adjourned on April 15. Eighty-six bills and sixty-three joint resolutions were approved by the governor and ten bills and five resolutions were vetoed. Thirty-seven other bills and forty-seven additional joint resolutions met a similar fate, owing to the

fact that they were not signed by the governor within thirty days after the adjournment of the legislature. The regular quadrennial elections for members of the legislature were held on Nov. 6, 1928.

OFFICERS. The members of the government at the end of the year were: Governor, Horace M. Towner; Attorney-General, James R. Beverly; Treasurer, Juan G. Gallardo; Commissioner of the Interior, Guillermo Esteves; Education, Juan B. Huyke; Agriculture and Labor, Carlos E. Chardon; Health, Dr. Pedro N. Ortiz; Auditor, Frederick G. Holcomb; Executive Secretary, Eduardo J. Saldana.

HISTORY. Throughout the year there was considerable discussion pro and con concerning the status of Porto Rico in the American Government. The Porto Ricans took advantage of the Pan-American conference at Havana and the good-will flight of Colonel Lindbergh to press their claim for self-government. When Colonel Lindbergh visited the island, he was presented with a concurrent resolution of the Porto Rican Legislature, which contained the following message to Americans:

* * * Welcome to our island, Colonel Lindbergh: welcome to the only place under the shadow of Old Glory where the discoverer ever set foot. Welcome, worthy son of the American Eagle. Welcome, Lone Eaglet. The good wishes of Porto Rico will go with you to the land of the brave and the free; and to your country and to your people you will convey the message of Porto Rico, not far different from the cry of Patrick Henry: "Liberty or death." It is the same in substance, but with the difference imposed by the change of times and conditions. The message of Porto Rico to your people is "Grant us the freedom that you enjoy, for which you struggled, which you worship, which we deserve, and you have promised us." We ask the right to a place in the sun—this land of ours, brightened by the stars of your glorious flag.

Previous to the delivery of this message for the American people, Antonio R. Barcelo, President of the Senate of Porto Rico, and José Tous Soto, Speaker of the House of Representatives, sent a joint telegram to President Coolidge which, after congratulating him on his speech delivered at Havana, went on to complain that Porto Rico was the only Spanish-American

country not invited to the conference and asked for the following solution to the Porto Rican problem:

If the United States, because precedent forbids it, or because of different ethnological conditions, or because of our geographical separation from the North American Continent, or because of the incompatibility of interests between both peoples, cannot make of our island but a mere subjected colony, then we ask to be allowed to be constituted as a free State, concerting thus with your great Republic such good and fraternal relations as may be necessary for the mutual welfare of the United States and Porto Rico and to the dignity of our citizens.

Justice, and nothing but justice, is what we ask as citizens of America, as faithful Christians, and as children of the Almighty God that gave us the same inalienable rights your Great Republic knew how to invoke when declaring for independence at the memorable convention at Philadelphia.

On February 28, President Coolidge replied to the above telegram of February 28. In a terse and somewhat sharp letter to Governor Towner, he reviewed the history of Porto Rico under American ownership and pointed out the advantages which had accrued to the island from that ownership. The final paragraph of the letter destroyed any hopes that the Porto Ricans may have had for independence of self-government or any change at all in the *status quo*.

There is no disposition in America, and certainly not on my part, to discourage any reasonable aspiration of the people of Porto Rico. The island has so improved and its people have so progressed in the last generation as to justify high hopes for the future, but it certainly is not unreasonable to ask that those who speak for Porto Rico limit their petitions to those things which may be granted without a denial of such hope. Nor is it unreasonable to suggest that the people of Porto Rico, who are a part of the people of the United States, will progress with the people of the United States rather than isolated from the source from which they have received practically their only hope of progress.

The Porto Rican Legislature made a long reply to this letter of President Coolidge, the opening paragraphs of which will serve to indicate the entire tone of the communication.

We are not urging upon the American people either independence or statehood. If statehood is offered to our people now, it is our honest belief that Porto Rico would not, could not, refuse the honor that statehood implies in spite of such financial difficulties as we would have to solve with the aid of Congress. If independence is tendered to us, we will accept independence on the same basis as our sister Cuba. But we suggest as a compromise between these extreme solutions a form of government that is neither statehood nor independence, but which, however, participates of both forms with the advantages of both and without the disadvantages of either.

We limit our ambitions for the present to an elective governor, leaving to the President the power of removal for cause. We apprehend the objections that can be raised against our interference in purely national affairs; but in compensation for this limitation, and on account of our peculiar conditions, we do not seek power to frame our own tariff, as was the case under the autonomic charter, but we do seek authority to reduce the national schedules on raw food staples so as to place the same within the reach of our laboring population; and also the power to increase tariff rates on products similar to those of our soil not produced in Continental United States when such products of ours are unprotected by the national tariff. We want the jurisdiction of the Federal Court restricted in civil matters to suits in which the construction of the Federal Constitution or of the Constitution of Porto Rico, is in question, and also that Federal jurisdiction be vested, as in the case of the Territories, in the Supreme Court of Porto Rico, which is wholly appointed by the President with the consent of the United States Senate. This would absolutely guarantee the sovereign powers of the nation.

The economic situation in September was dominated by the effects of the tropical hurricane which swept over the island on the 13th. Sur-

veys of the destruction reported widespread damage. The estimated damage to sugar-mill buildings was placed at 30 per cent of the valuation, but the machinery losses were reported as negligible. Stored tobacco stocks were also estimated to have been 30 per cent destroyed. The loss of fruit trees was placed at 10 per cent. It was expected that insurance would cover a large part of the damage, but the effect of the storm would probably be felt in agriculture and trade for some years to come. More than 200 persons lost their lives and upward of 2000 were wounded. A large sum of money was raised in the United States to aid the sufferers through the medium of the Red Cross.

PORTS AND HARBORS. GREAT LAKES.

River and harbor works on the Great Lakes under the United States Engineer Corps continued throughout the year. Dredging operations involved deepening the channel at Sandusky, Ohio, to 22 feet by removing 280,000 cubic yards of ledge rock; an extensive dredging operation on the up-bound, Middle Neebish Channel at St. Mary's River, Michigan; deepening the outer channel at Green Bay, Wisconsin, to 21 feet; as well as general contract and government dredging at numerous other lake ports. A plant for making concrete caissons was maintained by the Government at Milwaukee and 60 caissons were built there during the year for breakwater construction at Milwaukee, Frankfort, and Muskegon harbors. The size of these works is indicated by their lengths, 5600, 2600, and 3200 feet. In general, all pile and crib structures under government control were being gradually replaced by concrete.

Plans for extensive improvements, to cost over \$4,000,000, in the harbor facilities at Chicago were made public during the year. These involved not only municipal pier construction but also two barge terminals and considerable channel and dredging work.

MOBILE, ALABAMA. The new port and dock facilities were dedicated and opened to public use on June 25, 1928. The work had been done by the State through a Port Authority of which General Sibert was chairman, chief engineer and general manager, and involved the improvement of an area of 550 acres as a great ocean terminal with docks, unloading facilities, warehouses, etc., at a cost of \$10,000,000.

SAN FRANCISCO. The Chief of Engineers submitted a preliminary report advising some modifications of the plan for this harbor. A main channel 45 feet deep and 2000 feet wide is advised as well as the removal of several rocks, reefs, and shoals in the harbor.

BRAZOS RIVER—FREEPORT, TEXAS. An especially interesting project was under way to divert the Brazos River by a dam, carry it to the Gulf of Mexico in a new channel, and thus prevent the constant shoaling of the bar across the Freeport harbor entrance which has resulted after each flood of the river. In 1923 the project was abandoned after examination, but in 1925 further examination was made and the channel, for about 12 miles, was to be made an arm of the Gulf of Mexico with a dredged depth of 25 feet for navigation.

LOS ANGELES. One of the most important American works to be brought forward during the year was the plan for harbor breakwater and port facilities at Los Angeles. The project was approved by the city council and was to cost 18

million. A consolidation of railroad facilities and a unification of present works at Long Beach Harbor for operating purposes was involved. It was expected that the cost would be met in part by the Federal Government. The four railroads having terminals at Los Angeles entered into an operating agreement for combined facilities with the city under a general operating company.

VANCOUVER, B. C. A project to reduce the heavy currents and secure a tideless, fresh-water harbor at Vancouver was proposed. A dam across the Second Narrows, with a small and a large lock, is the principal feature of the design.

PORT OF BARI, ITALY. Harbor construction at this ancient port on the southeast coast of Italy, completed some 20 years ago, having proved inadequate, a new construction to be built in parts was under way. The old works consisted of two encircling breakwaters built out from the bay west of the Old Port. The new work ultimately was to consist of two similar but larger breakwaters which would encircle the old with an outer sea wall protecting the entrance. The old east breakwater was to be used as part of a new dock construction which would provide ample dock and pier facilities. The new breakwater construction (see *Engineering*, Mar. 2, 1928) was to be of concrete blocks on a sloping stone base. The precast, interlocking blocks are of unusual size and the construction is notable both for its character, size, and the exposed location of the work.

BIBLIOGRAPHY. A valuable series of memoirs on the Western Ports of the North Atlantic is being published in *Engineering*, the well-known British journal. They are by Brysson Cunningham and those for the year (Nos. 5-6) include Boston and Quebec. Previous issues cover Montreal, New York, Philadelphia, and Baltimore. A description and plan of the Port of Southampton appeared in the issue of June 29, 1928, as well as an interesting article on increased dock facilities at Avonmouth on May 11, 1928.

In the Port Series, brief descriptions of the ports of the United States published by the Board of Engineers for Rivers and Harbors of the United States War Department, No. 21 of the series on the Ports of Porto Rico was published in 1927. No. 22, on the Panama Canal and its Ports, appeared in 1928.

The publication *World Ports*, the monthly bulletin of the American Association of Port Authorities, Association of Pacific and Far East Ports, and Society of Terminal Engineers, published at New Orleans, continued to run interesting descriptions of port facilities, etc.

The *Mémoires de la Société des Ingénieurs Civils de France* for 1927 contains articles on the Port of Casablanca, the principal port of Morocco, and a series on transportation facilities in Poland which includes an article on ports.

Le Génie Civil (Paris), Aug. 4, 1928, had an interesting article on new electric cranes for dock work as used in the Port of Santander, Spain, and, September 29, on a floating crane of 450 tons capacity for the port of Algiers. *Engineering*, August 10, carried an article on Admiralty Floating Docks. An important new work of the year on this subject was by F. M. DuPlat-Taylor, *The Design, Construction, and Maintenance of Docks, Wharves, and Piers*, London.

PORTUGAL. A republic of Europe, situated west of Spain in the Iberian Peninsula, the

westernmost of all the States of Europe. It includes the Azores and Madeira. Capital, Lisbon.

AREA AND POPULATION. The area of Continental Portugal is 34,254 square miles; population, according to the census of 1920, 5,621,977, as compared with 5,545,595 in 1911. The Azores, with in area of 922 square miles, had a population of 242,613 in 1920; and Madeira, with an area of 314 square miles, a population of 169,777 in 1920; the total area, therefore, may be considered 35,490 square miles and the population in 1920 may be placed at 6,032,991, because the Azores and Madeira are considered integral parts of the Republic. The Portuguese colonial possessions in Africa and Asia had an estimated area of 936,264 square miles, with a population of 8,737,853, of which 927,292 square miles, with a population of 7,736,700, were in Africa. Lisbon, the capital, had a population at a special census in 1925 of 529,524 and Oporto, the next largest city, 203,091 (1920). Primary education is compulsory. In 1924-25 there were 6850 public elementary schools, 33 secondary schools, and five primary normal schools. For higher education there are three universities.

PRODUCTION, ETC. Portuguese agricultural returns during 1927 were exceptionally good and the large crops assisted in preventing any financial and exchange crisis. Wine production was more than double that of 1926, and the olive-oil crop was the largest in many decades. Other products also showed a marked gain over the previous year. Good prices were obtained for cork of which the entire product is practically exported. Of the total area of Continental Portugal, about 26 per cent is either annually cultivated or under meadows and pasture, about 8 per cent is under vineyards and fruit, 17 per cent under forests, and 49 per cent is waste land. The value of some of the principal crops in 1926 was as follows: Wheat, \$19,966,000; corn, \$16,080,000; potatoes, \$7,953,000; rye, \$5,219,000; and oats, \$3,841,000. The area of olive orchards in recent years had averaged about 825,000 acres, producing 39,110,000 gallons of oil in 1927. In 1925 there were 768,000 cattle, 1,117,000 swine, 3,684,000 sheep, 1,558,000 goats, 30,000 horses, 236,000 asses, and 88,000 mules.

Mineral production in 1925 included 122,000 metric tons of coal, 226,000 tons of pyrites and cement ore, and 1032 tons of tin ore. In 1926 there were 6310 persons engaged in mining as compared with 5095 in 1925. The principal manufacturing industry is that of textiles, in which 45,000 operatives were employed in 1924; of these 25,000 were in cotton mills. The amount of raw cotton consumed in 1925 was 31,887,000 pounds. Other manufacturing industries include decorative tile, chinaware, superphosphate of lime (about 100,000 tons annually), embroidery, and handmade lace.

COMMERCE. In 1926, the latest year for which statistics are available, imports totaled \$120,156,000 and exports, \$37,419,000. These figures compare with imports in 1925 of \$124,731,000 and exports of \$43,448,000. The principal items of import in 1926 were: Codfish, \$7,825,000; wheat, \$7,589,000; cotton, \$7,527,000; cotton manufactures, \$7,055,000; sugar, \$5,557,000; and rice, \$4,448,000. The principal items of export were: Wine (other than port), \$14,073,000; port wine, \$11,142,000; sardines, \$5,404,000; and cork, \$4,085,000. In 1927 exports from the

United States to Portugal were reported as \$10,700,000 (compared with \$11,600,000 in 1926). Imports from Portugal were \$4,600,000 (compared with \$5,600,000 in 1926).

FINANCE. The budget for 1927-28 provided total receipts of 1,459,378,000 escudos, collected from the following sources: Direct taxes, 312,038,000; stamp and registration, 179,600,000; indirect taxes, 535,047,000; dividends, interest, etc., 132,847,000; all other ordinary receipts, 262,461,000; extraordinary receipts, 37,385,000. The total expenditures were 1,848,045,000 escudos, distributed as follows: Debt service, 401,668,000; national defense, 483,779,000; public instruction, 157,808,000; all other ordinary expenses, 571,067,000; extraordinary expenditures, \$233,723,000. The debt of July 1, 1926, consisted of: Internal funded debt, excluding that held by the Government, 773,051,000 paper escudos (\$39,658,000) and 21,303,000 gold escudos (\$23,018,000); internal floating debt, 1,679,632,000 paper escudos (\$86,165,000); external funded debt, £33,025,000 (\$160,716,000); external floating debt, £23,918,000 (\$116,397,000). The gross amount of the internal funded debt was 4,791,389,000 paper escudos, of which the Government held 4,018,338,000.

COMMUNICATIONS. In 1927 Portugal had 282 vessels of 100 tons or more each, with a total capacity of 258,448 tons. This compares unfavorably with a total tonnage of 301,607 tons in 1923. In 1925, 7891 vessels of 21,264,718 tons entered, and 7873 vessels of 21,486,967 tons cleared the ports of Portugal. On Jan. 1, 1926, the total length of railway in the country was 2005 miles of which 825 represented government-owned lines.

GOVERNMENT. According to the constitution of 1911, executive power is vested in the President, elected by the Parliament for four years but ineligible for reelection, who acts through a responsible ministry; and legislative power in a Parliament of two chambers, the Upper House having 71 members elected by the municipal councils and the Lower House 164 members elected for three years by direct suffrage. Acting President in 1928, General Antonio Oscar de Fragozo Carmona (appointed in December, 1926). The cabinet as reconstructed on Aug. 26, 1927, is as follows: Prime Minister, General Carmona; Interior, José de Freitas; Foreign Affairs, A. M. de B. Rodrigues; Finance, General de Cordes; Justice, Dr. Manuel Rodrigues; War, Abilio A. de Passos e Sousa; Marine, Commander Portela; Colonies, A. I. Ferraz; Instruction, José A. M. de Magalhães; Commerce and Communications, A. Machade e Costa; Agriculture, General Pedrosa.

HISTORY. The dictatorship established by General Carmona in 1926 weathered the storm of a rather hectic year in Portugal. The wily military chieftain decided in the early part of the year to hold an election to make his provisional government a regularly constituted body. As was the custom in most countries where there was a military rule, provision was made by the Government to make sure that the returns would be satisfactory to the party in power. There was considerable opposition to the promulgated election law, but the "outs" were too helpless to do more than protest. The election was held on March 25, and, as everybody predicted, General Carmona, who was the only candidate, was elected, thus legalizing his régime. At approxi-

mately the same time the League of Nations, after an investigation of the resources of the country, refused to grant an uncontrolled loan to the Government. See LEAGUE OF NATIONS.

A revolt against the Carmona government occurred on July 20, but according to press dispatches, the Government had little difficulty in suppressing it. The movement was followed by the usual wholesale arrests and deportations. It was stated that several former cabinet members instigated the revolt but were only able to induce a small part of the army to join it. The bulk of the army remained loyal to General Carmona, hence he stayed in power. The remainder of the year passed in comparative quietude, although there were cabinet changes from time to time.

PORTUGUESE EAST AFRICA, or MOZAMBIQUE. A colony of Portugal, extending along the coast of Africa from 10° 40' S. latitude to the boundary of the Union of South Africa; bounded on the west by the Union of South Africa and Rhodesia, and on the north by Tanganyika. Area, 428,132 square miles. The estimated population is 3,657,008. There are three clearly defined divisions of the colony: (1) the Province of Mozambique, 295,000 square miles; (2) the territory under the Mozambique Company, 59,840 square miles; (3) the district under the Nyasa Company, 73,292 square miles. In addition, there is the "Kionga Triangle," formerly belonging to German East Africa, situated south of Rovuma, which was allotted to Portugal by the Treaty of Versailles. Lourenço Marques, the capital and chief port for foreign trade, had a population, according to the latest available statistics, of 13,154. Other ports are Mozambique, with a population of about 361,839 (472 Europeans): Ibo, Chinde, Beira, Quilimane, and Inhambane. The chief products are beeswax, coconuts, sugar, and mineral products. Rubber and ivory are exported. Imports in 1926, exclusive of gold and silver, amounted to 254,141,000 escudos and exports to 248,479,000 escudos. The proposed provincial budget of Portuguese East Africa for the fiscal year 1927-28 balanced at 399,701,814 escudos (\$19,985,090).

PORTUGUESE GUINEA, gī'nē. A colony of Portugal on the west coast of Africa, entirely surrounded on the land side by French territory. It includes the archipelago of Bijagoz, together with the island of Bolama on which is situated the capital, Bolama. Area, estimated at 13,940 square miles; population according to the census of 1924, 770,791. The principal port is Bissau. The chief products are wax, rubber, ivory, hides, and oil seeds. The imports in 1925 were valued at 50,337,548 escudos; exports at 45,590,992 escudos. The estimated public revenue for 1926-27 was 19,966,900 escudos and the expenditure, 19,685,239 escudos.

PORTUGUESE WEST AFRICA. See ANGOLA.

POST, LOUIS FREELAND. American lawyer, economist, and author, died at Washington, D. C., January 10. He was born at Vienna, N. J., Nov. 15, 1849, and received a public-school education. While working as a printer he studied law, and he was admitted to the bar of New York in 1870. In 1874-75 he was assistant U. S. Attorney at New York. From 1879 to 1882 he was an editorial writer for the New York *Daily Truth*, but in 1883 he returned to the practice of law, which he finally abandoned in 1890 for a career

as an editor, publicist, and public official. He had become interested in 1881 in the theories of economics of Henry George, advocate of the "single tax," and he became one of the foremost expounders of the theories. At various times in the eighties, he ran for offices on the Labor and Greenback tickets. In 1886, when Henry George ran for Mayor of New York, Mr. Post edited his campaign paper, the *Daily Leader*. After acting as editor of the *Standard*, of New York, and the *Record*, of Cleveland, Ohio, in 1898 Mr. Post founded the *Public*, at Chicago, and with his wife, edited that paper until 1923. For several years it was published at New York. From 1913 to 1921 Mr. Post was Assistant Secretary of Labor of the United States. His course in considering the cases of radicals sentenced to deportation was severely criticized in some quarters as too lenient, but a congressional committee which made an investigation decided not to press impeachment proceedings. Mr. Post wrote: *The George-Hewitt Campaign* (1887); *Ethics of Democracy* (1905; 2d ed., 1916); *The Prophet of San Francisco* (1905); *Ethical Principles of Marriage and Divorce* (1906); *Social Service* (1909); *Land Value Taxation* (5th ed., 1915); and *The Deportations Delirium of 1920*.

POST OFFICE. See under UNITED STATES.

POTARITE. See CHEMISTRY, under *Mineral-ogical Chemistry*.

POTASH, POTASSIUM. See CHEMISTRY, INDUSTRIAL; FERTILIZERS.

POTATOES. The potato production in 1928 of 22 countries reporting to the International Institute of Agriculture, Rome, was estimated at 3,938,783,000 bushels, a decrease of 5.3 per cent, as compared with the production in 1927 and an increase of 2.6 per cent over the average yield for the five years 1922-1926. The 1928 acreage in those countries was reported as 23,467,000 acres, which was 2.9 per cent above the acreage of 1927 and 4.8 per cent above the five year average.

Europe produces about 90 per cent of the world's potato supply, and production in European countries greatly influences the grand total. Among the important producing countries, Germany reported a decrease of 1.2 per cent, Poland of 11.9 per cent, and Czechoslovakia of 24.6 per cent, as compared with their yields in 1927. The 1928 production of the leading countries outside the United States was reported as follows: Germany, 1,363,508,000 bushels; Poland, 1,028,439,000 bushels; Czechoslovakia, 252,470,000 bushels; The Netherlands, 136,684,000 bushels; England and Wales, 124,432,000 bushels; Belgium, 109,759,000 bushels; Spain, 104,718,000 bushels; and Canada, 84,657,000 bushels. The Canadian crop was 9.3 per cent above the yield of 1927. The production of the United Socialist Soviet Republics in 1927 was 2,009,149,000 bushels.

The potato production of the United States in 1928, estimated by the U. S. Department of Agriculture at 462,943,000 bushels produced on 3,825,000 acres or at an average yield of 121 bushels per acre, was the highest ever recorded, being nearly 10,000,000 bushels above the preceding record crop, which was secured in 1922. These figures compared with a yield of 402,741,000 bushels, a planting of 3,476,000 acres, and an average yield per acre of 115.9 bushels in 1927. The average farm price reported was 54 cents per bushel or 42.5 cents under the average

bushel price the year before. At these prices, the total value of the crop of 1928 was \$250,043,000 and of the crop of 1927, \$398,741,000.

As in the preceding years, potatoes were grown in every State and the leading States and their yields were as follows: Minnesota, 38,940,000 bushels; Maine, 37,840,000 bushels; Michigan, 35,802,000 bushels; New York, 32,376,000 bushels; Pennsylvania, 31,980,000 bushels; Wisconsin, 31,970,000 bushels; Virginia, 21,593,000 bushels; and Idaho, 19,720,000 bushels. In average yield per acre, Maine led with 220 bushels, followed by Idaho with 170 bushels and New Jersey with 160 bushels. All other States produced less than 150 bushels per acre, including fourteen with less than 100 bushels per acre. The average farm prices reported for the different States ranged from 30 cents in Minnesota and North Dakota to \$1.50 in Florida. Maine, Michigan, and Wisconsin reported an average farm price of 40 cents per bushel.

The cost of potato production in 1927, according to results of a study by the Department of Agriculture, was from 72 to 80 cents per bushel in the Eastern, Northeastern, Southeastern, and West South Central States, and from 49 to 58 cents per bushel in the Western, North Central, and Central States. The exports of potatoes for the fiscal year ended June 30, 1928, as reported, amounted to 2,424,000 bushels, while the imports reached to 228,303,000 pounds or 3,803,550 bushels.

Early in the year it was reported that the feeding of potatoes to livestock was a growing practice in the Northwest. During the winter of 1927-28 nearly a million sheep and many cattle in the Yakima Valley, Washington, were wintered on potatoes, which sold for this purpose at \$5 per ton. A study by the Department of Agriculture of the utilization of the 1927 potato crop in the 35 States producing 370,276,000 bushels of late potatoes indicated that 31,260,000 bushels or 8.4 per cent of the crop were unfit for food or seed, 56,074,000 bushels or 26.8 per cent were saved for food on farms, 35,478,000 bushels were saved for seed, and the balance of 274,464,000 bushels was available for sale. See HORTICULTURE.

POTHIER, ARAM J. American banker and Governor of Rhode Island, died at Woonsocket, R. I., February 4. He was born in Quebec, Can. July 26, 1854, and was of French-Canadian descent. He studied at Nicolet College until he was sixteen, and then went with his parents to Woonsocket, R. I. His first employment was as a clerk in a grocery and in 1875 he became a clerk in the Woonsocket Institution for Savings, with which bank he remained until his death; he was president of the institution for many years. He had other large business interests. Mr. Pothier's first political office was that of member of the Rhode Island House of Representatives, 1887-88; he was city auditor of Woonsocket, 1889-94; mayor, 1894 and 1895; Lieutenant-Governor of Rhode Island in 1898, and Governor of the State, 1909-15 and from 1925 until his death. He had the distinction of being elected governor seven times, a record equaled in American history by George Clinton only, who was the first Governor of New York State. Mr. Pothier was American commissioner to the Paris expositions of 1889 and 1900. The degree of LL.D. was conferred on him by Manhattan College, Holy Cross College, and Niagara University.

POTTER, CHARLES LEWIS. American military engineer, died at St. Louis, Mo., August 6. Born at Lisbon Falls, Me., Jan. 24, 1864, he was graduated from the United States Military Academy in 1886, and was commissioned second lieutenant in the Fifth Cavalry. A year later he was transferred to the Corps of Engineers and was graduated from the Engineer School of Application in 1889. He served in the Philippines during the Spanish-American War and the Philippine Insurrection, 1898-1900. Upon his return to the United States in 1900, he was stationed at Memphis in charge of the third district of the Mississippi River Commission. He was actively connected with engineering work on the Mississippi River for a number of years, and in 1910 he was made secretary of the Mississippi River Commission. He was district engineer at St. Paul, 1912-15, in charge of river work above St. Paul. He was engaged in government engineering at Portland, Oreg., 1915-16, and at Boston, 1916-17. During the World War, 1917-18, he was director of the gas service at Washington, D. C., and he was given charge of the San Francisco Engineering District from 1918-20. Colonel Potter was appointed president of the Mississippi River Commission on Mar. 19, 1920. He retired on Jan. 24, 1928, being given the rank of brigadier-general, but was recalled for relief work, during the Mississippi flood in the following month, with the Flood Control Commission. To prevent future floods, he advocated an extensive engineering project of floodways and outlets financed by the Federal Government.

POTTERY, ANCIENT. See ANTHROPOLOGY.

POULTRY. See LIVESTOCK; VETERINARY MEDICINE.

POULTRY DISEASES. See VETERINARY MEDICINE.

POWER DEVELOPMENT. See POWER PLANTS, STEAM; WATER POWER.

POWER PLANTS, STEAM. During 1928 the number of new steam central stations completed or projected in the United States was smaller than usual, but extensions to existing stations were numerous and included many units of extremely large capacity. This represented an increase of about 10 per cent in installed capacity which was somewhat less than the increase in output of electricity, but more extensive interconnections of plants and systems as well as increased efficiency of production made up for the difference. The total central station output was approximately 88 billion kilowatt-hours to which must be added 1,600,000 kilowatt-hours imported from Canada.

In the matter of steam pressures, power station designers still were divided into three groups, those adhering to the more conservative pressure of around 400 pounds at the boilers, those in the 600-700-pound class, and those who found increased economy in 1200 to 1400 pounds or more. The last group included an increased number of adherents during the year. For three years, two 1200-1400-pound stations had been in successful operation. These were the Edgar Station of the Edison Electric Illuminating Company of Boston and the Lakeside Station at Milwaukee. The former was installing its fifth high-pressure boiler and third high-pressure turbine, while the latter had two such units in operation. A third installation in this class, the Northeast Station at Kansas City, had gone into service. All three

of these plants employed high-pressure turbines exhausting at medium pressure into the main station system.

Construction was started during the year on the first two stations to be built as complete high-pressure plants, with turbines operating over the whole range from boilers to condensers. These were the Deepwater Station near Wilmington, Del., and the Holland Station at Holland, N. J. The former was being built jointly for the American Gas & Electric Company and the United Gas Improvement Company. Steam will be generated at 1350 pounds, 725° Fahr. temperature and will supply three turbine-generators, two 53,000-kilowatt cross-compound condensing units taking steam over the whole range, and the third, a 12,500-kilowatt high-pressure unit will exhaust at 200 pounds to furnish steam for process to one of the plants of the DuPont Company. At the Holland Station, a W. S. Barstow property, steam will be generated at around 1400 pounds and will supply 55,000 kilowatt cross-compound turbines employing reheat at 400 pounds, 750° Fahr.

In the 600-700-pound class, the Powerton Station at Pekin, Ill., went into service with its first unit of 55,000 kilowatts capacity. The first section of the State Line Station, projected in 1927 and laid out for an ultimate capacity of 1,000,000 kilowatts, was nearing completion and its first turbine of 208,000-kilowatts capacity was soon to be in operation. A 165,000-kilowatt turbine was added to the Philo Station at Philo, Ohio, and one of 104,000-kilowatts at Crawford Avenue in Chicago.

Additions to the 400-pound stations include the new Delray No. 3 plant of the Detroit Edison Company, and large extensions of the Hudson Avenue Station of the Brooklyn Edison Company, The East River Station of the New York Edison Company, the Charles R. Huntley Station at Buffalo, Cahokia at East St. Louis, the Long Beach Station of the Southern California Edison Company and the Hell Gate Station in New York. The last-named in 1928 was the largest steam station in the United States, having a capacity of over 600,000 kilowatts.

While advancement in steam temperatures above 750° Fahr. had been slow, one company was installing a 10,000-kilowatt unit to operate at 1100° Fahr. at the boiler and 1000° at the turbine. A 10,000-kilowatt mercury boiler and turbine went into operation at the South Meadow Station of the Hartford Electric Light Company. See BOILERS.

Among the industrial plants, there was a large number operating at 400 pounds, employing high-pressure turbines which exhaust to process at 50 to 100 pounds, and the number of such plants is steadily increasing. One large plant was operating at 650 pounds, another at 800 pounds, a third at 1000 pounds, and a fourth has one unit operating at 1500 pounds. A sensation of the year was the announcement that the Philip Carey Manufacturing Co., near Cincinnati, would begin construction of a plant to utilize steam at 1400 pounds, in reciprocating engines which would exhaust to process. The boilers were to be designed for 1800 pounds.

The year witnessed much research work in the field of alloy steels to meet the service demands of high pressure and high temperature. Also, furnace design underwent many changes to cope with the demand for high capacities and high

rates of forcing boilers. Stoker sizes were increased and designs improved so as to permit higher combustion rates, greater flexibility of operation, and highly preheated air. Among the smaller industrial plants, the year saw a considerable increase in the application of stokers, due largely to renewed activity on the part of smoke prevention departments in a number of cities.

There was wider appreciation of the fact that the stoker and pulverized coal each had a place according to local conditions, and stoker improvements enabled it to stem the popular trend toward pulverized coal. The latter was still going strong, however, and the unit system is now making headway in the large stations, where formerly the centralized system held the field. Greater refinements were being made in both systems and in burners, based on closer studies of the influence of pulverization fineness and flame reactions. There was also a trend toward larger mills.

In Europe, a number of high-pressure plants had been in successful operation for several years, but these in general were smaller than in the United States. The second Benson boiler was operating in Germany at 3200 pounds, and a third was reported to be under construction. Many of the European countries were devoting much attention to better utilization of fuels, higher efficiencies and adequate power supply in the realization that more power in industry is the key to national prosperity. See STEAM TURBINES; DYNAMO-ELECTRIC MACHINERY.

POWER TRANSMISSION. See ELECTRIC POWER TRANSMISSION.

PRAIRIE PROVINCES. The name applied to the three Canadian provinces of Manitoba, Saskatchewan, and Alberta. Total area, 758,817 square miles (Manitoba, 251,832; Saskatchewan, 251,700; Alberta, 255,285). Population, according to the census of 1926, 2,067,682 (Manitoba, 639,056; Saskatchewan, 821,042; Alberta, 607,584). For production, etc., consult the articles on the respective provinces.

PRATT INSTITUTE. A non-sectarian educational institution at Brooklyn, N. Y., founded in 1887, and composed of four schools; Fine and applied arts, household science and arts, science and technology, and library science. The 1928 autumn enrollment was 4614, divided as follows: Arts, 1707; household science, 900; science and technology, 1980; library school, 27. There were 175 members on the faculty, and 79 special lecturers. The library contained 140,000 volumes. President, Frederic B. Pratt, A.M., LL.D.

PREHISTORY. See ANTHROPOLOGY.

PRESBYTERIAN CHURCH. The Presbyterian Church, with the Reformed churches, rests on features of the Reformation brought forward by Zwingli and Calvin. It consists of bodies in the United States, the British Isles, and elsewhere, following the doctrinal and ecclesiastical system developed in Holland and France and more fully in Scotland under John Knox. The distinctly Presbyterian bodies of the United States are derived for the most part from bodies in Great Britain, but are in many respects similar to the Reformed churches in the United States, sprung from parent bodies in other parts of Europe, and particularly in Holland. The following organizations in the United States bear the Presbyterian name: The Presbyterian Church in the United States of America; Presbyterian Church in the United States (South); United

Presbyterian Church of North America; Cumberland Presbyterian Church; Cumberland Presbyterian Church, Colored; Reformed Presbyterian Church; Reformed Presbyterian Church, General Synod; Associate Synod of North America, also known as the Associate Presbyterian Church; and the Associate Reformed Presbyterian Synod. The Presbyterian churches of the United States have general affiliations with the Alliance of Reformed Churches Throughout the World Holding the Presbyterian System, and also with the General Council of the Presbyterian and Reformed Churches in America, a similar organization of purely American scope. Steps were taken at the meeting of the American section of the World Alliance at Richmond, Va., in 1925, to effect a union of the world and American bodies.

PRESBYTERIAN CHURCH IN THE UNITED STATES OF AMERICA. This is the largest body of the denomination and is represented by churches in every State of the Union and by official mission stations in Alaska, Cuba, Porto Rico, and foreign lands. In 1928 the churches in the United States were organized into 46 Synods and 294 Presbyteries. Statistics for the year ended April 1, showed a net gain in membership for the year of 35,570, and a total membership of 1,962,838. The Sunday-school enrollment totaled 1,614,013, an increase of 17,498 over the previous year. As a result of the movement on foot in the church to dissolve churches having a nominal existence and to combine churches where possible, the number was decreased by 65, giving a total of 9432, including 54 churches organized during the year as against 78 which were dissolved. The number of ministers had increased from 9497 in 1927 to 10,013 in 1928. Contributions during the year amounted to \$64,598,530, the largest amount ever raised by the denomination in one year, and an increase of \$1,815,623 over the previous year. Of the total income, \$48,525,779 was used for congregational expenses, while \$15,642,508 was devoted to benevolences, including \$4,195,640 given to the Board of National Missions; \$3,667,962 to the Board of Foreign Missions; and \$817,029 to the Board of Christian Education; the Board of Pensions received \$524,736 of the total contributions to benevolences, and in addition \$5,457,600 from subscriptions to its \$15,000,000 special fund. The denomination maintained 56 colleges and 13 theological seminaries. The official medium of the denomination is the *Presbyterian Magazine* (monthly). Privately owned Presbyterian periodicals are the *Presbyterian Advance*, the *Presbyterian Banner*, and the *Presbyterian* (all weekly). The Rev. Hugh Kelso Walker, D.D., LL.D., of Los Angeles, Calif., was Moderator of the General Assembly for 1928-29, the 1928 meeting of which was held at Tulsa, Okla., May 24-30. The chief permanent officer is the Stated Clerk, who in 1928 was Dr. Lewis Seymour Mudge, D.D., LL.D., 514 Witherspoon Building, Philadelphia, Pa.

PRESBYTERIAN CHURCH IN THE UNITED STATES (SOUTH). This division of the Presbyterian denomination covers the territory commonly known as the Southern States. It was composed in 1928 of 17 Synods and 90 Presbyteries, with 3596 organized churches and 2342 ministers. The ruling elders numbered 15,730, and deacons, 17,390. The total church membership was 444,657; the Sunday-school enrollment, 431,065. Contributions for the year were: Current expenses, \$10,306,188, a gift of \$23.18 per capita; and benevolences, \$5,520,285, a gift of \$12.40 per capita, making

the total gift per member \$35.58. This church had sent out and was supporting 484 missionaries in six countries—Africa, Brazil, China, Japan, Korea, and Mexico. These missionaries were assisted by 3099 native workers. In the six countries there were 44,278 church members and 70,104 members of Sunday schools. The office of the General Assembly and Bureau of Vacancy and Supply is located in Dallas, Texas. The Rev. J. D. Leslie, D.D., LL.D., is Stated Clerk and Treasurer.

PRESBYTERIAN CHURCH OF NORTH AMERICA, UNITED. A branch of the Presbyterian Church formed by the union of the Associate and the Associate Reformed churches (Secession and Covenanter) effected in Pittsburgh in 1858. It represents the earlier covenanter and secession movements of the denomination in Scotland, from which it inherited whatever was distinctive in their views and usages. In organization and government it is in accord with other Presbyterian bodies, having the same courts-session, presbytery, synod, and general assembly, and observing the same general methods of baptism, admission to church membership, and ordination to the ministry. The General Assembly convened in St. Louis, Mo., May 23, 1928. On that date there were 11 synods, 57 presbyteries, 898 congregations, 916 ministers, 5053 ruling elders, and a church membership of 175,075 in the United States. The total membership, including missionary fields, was 238,240; the Sunday-school enrollment was 177,589; there were 958 Young People's societies, with a membership of 26,225; and 1634 missionary societies. The average pastor's salary was \$2435; congregational expenses amounted to \$4,150,165; total contributions, \$6,224,733, an average per member of \$35.55; and missionary contributions, \$1,639,382, an average of \$9.36 per member. The denomination supported 400 men and women in four foreign-mission fields, and 411 men and women in homeland missions. It carried on medical work in 31 foreign hospitals and dispensaries; conducted educational work in 333 schools at home and abroad; maintained 9 colleges and 4 theological seminaries at home and abroad; reached 35,000 youths in its schools and colleges, and graduated more than 600 young men and women. New houses of worship were erected during the year at a cost of \$663,800, and the total estimated value of the church property of congregations was \$27,886,747; value of parsonages, \$3,443,545; value of property and permanent funds of the mission boards, \$8,846,917; value of property and permanent funds of the colleges and seminaries \$7,653,124; total value of property and permanent funds of the denomination, \$47,830,333. The official organ of the Church is the *United Presbyterian*, a church-owned yet independent weekly, published at Pittsburgh, Pa. The Rev. W. A. Spalding, D.D., of Albany, Oregon, was the Moderator of the General Assembly, and D. F. McGill, D.D., LL.D., Bellevue, Pa., was Stated Clerk.

PRESIDENTS, COLLEGE. See **UNIVERSITIES AND COLLEGES.**

PRINCE EDWARD ISLAND. A Maritime Province of Canada; the smallest province in the Dominion, situated at the mouth of the Gulf of St. Lawrence and separated by Northumberland Strait from the mainland of New Brunswick and Nova Scotia. Area, 2184 square miles; population, according to the census of 1921, 88,615. The capital is Charlottetown, with a population

of 12,347. The chief industries are agriculture, stock raising, fishing, and the breeding of silver foxes. (For particulars of agriculture and live stock, see under CANADA.) The value of pelts marketed and live foxes sold for breeding purposes in 1926 was estimated at \$3,000,000. The total value of fisheries in 1925 was \$1,598,119 as against \$1,201,772 in 1924. The revenue for 1925 was \$740,076 and the expenditure \$745,338. The public debt on Dec. 31, 1925, was \$2,490,200, from which should be subtracted \$1,335,072 standing to the credit of the province at Ottawa. The province is under a lieutenant-governor and a legislative assembly of 30 members, elected for four years, a property qualification being required in the case of one-half the members and the other half being elected by universal man and woman suffrage. Lieutenant-Governor, Frank R. Heartz; Premier and Attorney-General, A. C. Saunders; Secretary-Treasurer, W. M. Lea; Public Works, J. P. McIntyre; Ministers without portfolio, J. Blanchard, D. McDonald, B. W. Le Page, W. B. Butler, J. F. McNeil, and O. S. Inman.

PRINCETON UNIVERSITY. A non-sectarian institution for the higher education of men at Princeton, N. J., founded in 1746. The 1928 autumn enrollment totaled 2453, of whom 2226 were undergraduates and 227 graduate students and fellows. The total endowment in 1927 was \$17,743,840; the total income, \$2,174,712; and the total expenditures, \$2,108,772. The number of volumes in the library was 611,000, exclusive of pamphlets, broadsides, manuscripts, etc. The campaign of the graduate council to secure \$2,000,000 for the increase of faculty salaries was successfully completed before the end of the year, as well as an endowment of \$2,000,000 for scientific research to which \$1,000,000 was to be added by the general education board. The general education board also enabled the departments of art and archaeology and of modern languages to inaugurate special research activities in humanistic studies.

New appointments of the year to the Princeton faculty were those of Hermann Weyl, of Zurich, Switzerland, as T. D. Jones professor of mathematical physics; G. H. Hardy as exchange professor in mathematics from Oxford University; H. L. Lutz, as professor of public finance; P. MacClintock, as Knox Taylor professor of geography; and Augustus Trowbridge, as dean of the graduate school, succeeding Andrew Fleming West, retired. Important gifts to the library of the university included the William A. White copy of the First Folio Shakespeare, the Thomas Rowlandson Collection, and the John Bright Memorial Collection founded by Mrs. Florence Brooks-Aten. The Princeton University Geological Museum also received a valuable addition to its Oligocene Collection in the fossil material, for the study of the mammalian fauna of the Lower Eocene, discovered by the Princeton Scientific Expedition in the Bighorn Basin in Wyoming during the summer.

A university chapel, harmonizing in structure with other recent buildings on the campus, was dedicated on Memorial Day, and later in the year announcement was made of the gift of \$60,000 from Mr. and Mrs. Harvey S. Firestone, of Akron, Ohio, for use in connection with the chapel, including \$10,000 from Mrs. Firestone, to be given at the rate of \$2000 for five years, to further the development of music in the chapel.

On November 15, more than 200 engineers and scientists from various sections of the United States gathered at Princeton for the official dedication of the Engineering Building constructed in the Gothic style, the first independent home of the school of engineering of the university.

Changed conditions in undergraduate life resulted in the amalgamation of the two historic literary societies, the Cliosopich and the American Whig, antedating the American Revolution, into the Whig-Cliosopich Society. Similar changes in student affairs were reflected by the organization of an undergraduate council in place of the former senior council, and the creation of a faculty standing committee to be known as the Council on Undergraduate Life, to include all phases of undergraduate study. Two new scholarships to be known as the Henry Clay Irons Memorial Scholarships, amounting to \$450 each, became available to students in the school of engineering, through their endowment by Henry C. Irons, Jr., class of 1921, and his brother William G. Irons, 2d, class of 1922, of New York, in memory of their father, the late Henry Clay Irons, class of 1889, a construction engineer. President, John Grier Hibben, Ph.D., Litt.D., LL.D.

PRISON REFORM. See RUSSELL SAGE FOUNDATION.

PRIZE FIGHTING. See BOXING.

PRODUCE. See HORTICULTURE.

PROHIBITION. Prohibition again appeared to occupy the major attention of the American public during the year and despite the decisiveness of Governor Smith's defeat in the presidential election there is no question that the subject was still as unsettled as ever when the year closed. Early in the year events began to indicate that Prohibition was to play an important part in the forthcoming national election. Senator Borah, himself no candidate for the Republican nomination, put a series of questions to national Republicans who had indicated their willingness to be their party's standard bearers. These questions included the following: 1. Do you favor a Prohibition plank in the party's platform? 2. What are your enforcement views? 3. Do you favor permitting the States to determine the legal alcoholic content of beverages? 4. Do you favor the repeal of the Eighteenth Amendment or the Volstead Act? Mr. Hoover's views, in the light of his subsequent nomination, are of interest. He said: "I do not favor the repeal of the Eighteenth Amendment. I stand, of course, for the efficient, vigorous, and sincere enforcement of the laws enacted thereunder. Whoever is chosen president has under his oath the solemn duty to pursue this course. Our country has deliberately undertaken a great social and economic experiment, noble in motive and far-reaching in purpose. It must be worked out constructively."

Upon this declaration Secretary Hoover took his stand when he received the Republican nomination. On the other hand, Governor Smith boldly supported modification with a scheme of State control modeled on the Canadian system. In his Milwaukee speech of September 29, the Democratic candidate outlined a programme of the following character: An amendment to the Volstead Act which was to contain a "sensible definition" of an alcoholic beverage. On this basis each State was to fix its own alcoholic content. An amendment to the Eighteenth Amendment

to permit fuller freedom of action for the individual States. A popular referendum on the question of Prohibition. "I would then regard it as the right of the State itself, subject to the limitations which I have outlined, to dispense to its own inhabitants alcoholic beverages as desired by the people of the State."

The issue was thus placed four-square before the American public. As the campaign progressed it became evident that all the Dry forces were supporting Secretary Hoover. The Anti-Saloon League, in public statements, declared that the election of Governor Smith would be a definite blow to the whole theory of Prohibition. Assistant Attorney-General Willebrandt, in addresses before religious groups, called for the defeat of the Democratic candidate because he was a menace to American institutions. Never was the whole subject of Prohibition debated so widely before as a result of Governor Smith's frank recognition of the failure of enforcement.

With the defeat of Governor Smith it was only natural that the Drys should claim the victory as a vindication of all their efforts. F. Scott McBride, of the Anti-Saloon League, C. T. Wilson, of the Board of Temperance, Prohibition, and Public Morals of the Methodist Episcopal Church, and Dr. Ernest A. Cherrington, of the World League Against Alcoholism, all agreed that the repudiation of Governor Smith was a triumph for Prohibition. Mr. Cherrington's statement, for example, said: "The continuance of prosperity, the steady decrease in our death-rate, the drop in our criminal ratio, the disappearance of poverty and the slum, the new moral idealism . . . these are all unanswerable arguments in favor of Prohibition." It was generally conceded, however, that the election of a Republican administration would allow an opportunity for the complete testing of what Mr. Hoover had called "a noble experiment." The events of the next four years would permit the American people to see if Prohibition could really be enforced.

OTHER ELECTION RESULTS. In an unofficial referendum in Massachusetts, the Wet forces won an overwhelming victory when the voters in 36 of the State's 40 senatorial districts voted, 697,735 against 414,512, for the repeal of the Eighteenth Amendment. Thirty-four districts were carried by the Wets.

On November 14, the voters of New Zealand, in the regular triennial parliamentary election, expressed their desire for the continuance of the licensing system. The majority was in the neighborhood of 200,000. The electorate was called to indicate its preference among the following: 1. National continuance of the liquor trade or licensing. 2. State purchase and control of the trade. 3. National Prohibition.

ENFORCEMENT APPROPRIATIONS. For the fiscal year beginning July 1, 1923, the United States Congress in February voted an appropriation of \$13,000,000 for the Prohibition Bureau and \$28,640,000 for the Coast Guard, of which at least \$15,000,000 was to be used to fight rum-running. The debate attending the passage of the appropriation measure was very spirited in view of the fact that the Wets insisted upon an appropriation of \$75,000,000 as well as the restriction of the release of alcohol for industrial purposes. This was in line with their attitude that Prohibition could have a complete test only if every possible measure was taken toward enforcement. The

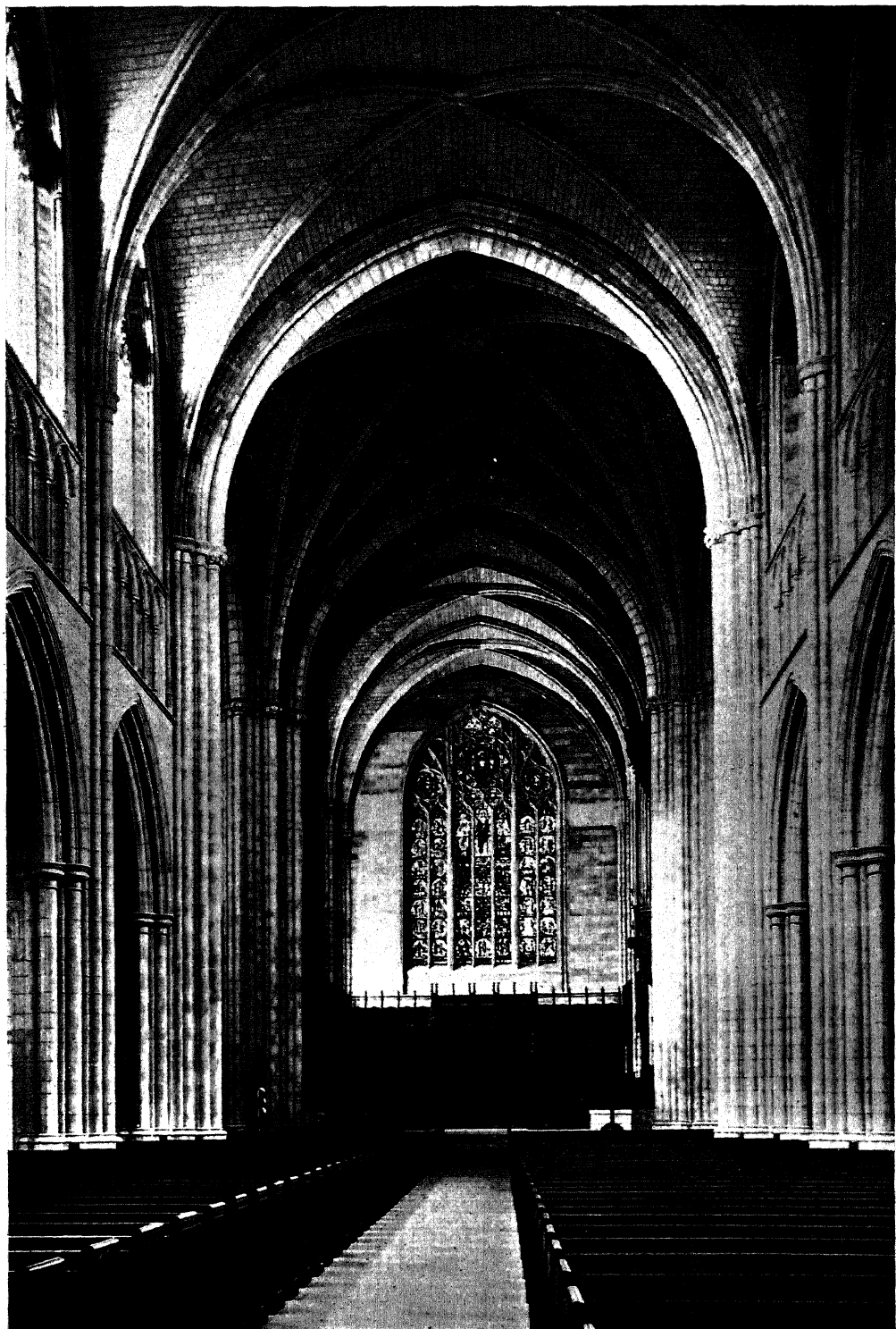


Photo by Sigurd Fischer

UNIVERSITY CHAPEL, PRINCETON UNIVERSITY
GRAM & FERGUSON, ARCHITECTS

same situation developed in the short session in December when the Congress came to debate the Treasury Department appropriation bill, for the fiscal year beginning July, 1, 1929. Prohibition Commissioner Doran, though he asked for only \$13,500,000 for his bureau, confessed that it would cost the country \$30,000,000 annually if the nation was to be effectively policed. Both he and Admiral Billard, of the Coast Guard, were satisfied with the success of the war against the rum-runners. To them, serious sources of supply were European ports, the French Island of St. Pierre, and particularly Canada. On the other hand, the domestic production of alcohol and liquor was well in hand, and this had particular reference to the illegal diversion of industrial alcohol. The chief source of domestic supply was the illicit manufacture of spirits from grain and sugar.

The Wets, in debating the appropriation measures, attempted their usual tactics. They sought to have passed enormous supply bills and, in fact, the Senate passed Senator Bruce's measure to give the Prohibition Bureau \$270,627,384 for its work. This was done by the majority to forestall a lengthy debate on the subject that was threatening, for it was obvious that the conference committee of the two houses would not permit the figure to stand. The conference report, which was passed in the Senate by a narrow majority of three votes and in the House without a recorded vote, called for the expenditure of \$13,500,000 on the work of the Prohibition Bureau and \$14,686,000 for the Coast Guard to be devoted to enforcement work.

WORK OF THE PROHIBITION BUREAU. Dr. Doran's report of the work of his office for the fiscal year ending June 30, 1928, was released early in December. It showed that Prohibition agents had made 75,307 arrests and gained 58,813 convictions, an increase of 10,000 arrests over the previous year. Operating with 4396 permanent, and 92 temporary, employees, the Bureau had seized 1,048,636 gallons of illegal spirits, 4,254,029 gallons of malt liquors, 396,603 gallons of wine, 16,220 illicit distilleries, 18,980 stills, and 217,278 fermenters. During the year, 169,000,000 gallons of alcohol were manufactured, 92,000,000 gallons of denatured alcohol, and 159,000,000 gallons were withdrawn for denaturing. Distilled spirits withdrawn from warehouses on which taxes were paid amounted to 1,613,534 gallons, leaving in bond approximately 20,000,000 gallons of such spirits (though the figure was actually half that amount because of evaporation).

WORK OF THE COAST GUARD. Admiral Billard's report for the fiscal year ending June 30, 1928, showed that his unit boarded and examined 65,710 vessels and of these, 1554 were seized or reported for violations of the law. It was declared that, "The law-enforcement work of the Coast Guard relative to the prevention of the smuggling of liquor into the United States from the sea has been prosecuted with very satisfactory results. This illicit traffic has been tremendously reduced and rum row has been eliminated."

WORK OF THE DEPARTMENT OF JUSTICE. The report of the Assistant Attorney-General, Mrs. Mabel W. Willebrandt, in charge of the Division of Prohibition of this Department, showed that for the fiscal year 1928 her division had instituted 55,729 criminal prosecutions, an increase of 15,020 over the preceding year. Of the 58,429 cases that were terminated during the year, 48,-

820 resulted in convictions. Jail and prison sentences imposed totaled more than 7700 years while the total amount of fines collected was \$7,303,563. As a result of the use of the padlock, the number of permanent injunctions obtained was 3999, which was an increase of 586 over the preceding year.

As a result of the activities of the customs officials and the Coast Guard, progress was made in checking the importation of illicit liquor by domestic ships. During the fiscal year, 370 domestic craft were seized as compared with 320 in 1927. In 1928 almost half the seized craft were in Florida waters. Foreign craft seized totaled 22, while 28 ships were forfeited during the year. It may be noted that, in 1925, 35 foreign ships were seized, while only 10 forfeitures were made. Smuggling from Canada was regarded as a still unsolved problem. In view of the fact that a large part of the liquor smuggled in from Canada was cleared through the regular Canadian customs, it was possible to obtain an approximate idea of the size of this traffic. The figures that follow indicate the size of this traffic (in whisky only) over a period of years.

EXPORTS OF WHISKY FROM CANADA TO UNITED STATES

	<i>Amount in Gallons</i>	<i>Canadian Value</i>
1925	665,896	\$10,772,988
1926	988,152	15,475,270
1927	1,053,213	17,171,484
1928	1,169,002	18,883,541

LIQUOR-SHIP SEIZURES. The action of the British Government during the year indicated increasing dissatisfaction with the zeal displayed by the Coast Guard in stopping British ships. In April the British Ambassador delivered a note to the State Department in which he pointed out specific violations of the so-called Bahaman agreement on the part of American Prohibition forces. The differences between the two governments included territorial limits, legal jurisdiction, etc. The Bahaman agreement, arrived at on Mar. 27, 1926, was in effect a gentleman's understanding and did not bind either party legally and was to be subject to withdrawal if it did not work. The agreement was to permit "specified United States revenue cutters to enter British territorial waters at Gun Cay and the islands contiguous thereto without strict compliance with Admiralty regulations governing the visits of foreign armed vessels to British overseas ports." But "the only formality which his Majesty's Government desires to see observed in this connection is that the cutters in question shall first call at Bimini to inform the Bahamas Commissioner of their intention."

The British note pointed out specific violations of this part of the agreement and enumerated the cases of three rum chasers that had entered Bahaman waters without first indicating their intentions to the authorities. The fact is, the note of the British Government was not the first evidence of dissatisfaction. It followed a long interchange of correspondence and conferences among British officials, Coast Guard authorities, and State and Treasury Department officials bearing on this same point, i. e., the seizure of British vessels.

U. S. SUPREME COURT. In May, the U. S. Supreme Court, by a divided bench of five to four, declared wire-tapping legal when done by Pro-

hibition agents when in the performance of their duties. The case revolved about the conviction of a large group of bootleggers in the State of Washington against whom successful evidence was obtained through tapped wires. It is interesting to note that a State statute forbade such practices. The appeal taken to the Supreme Court was based on the Fourth and Fifth Amendments of the Constitution guaranteeing individuals the right of security against unreasonable search. Chief Justice Taft wrote the majority decision in which he said: "The language of the amendment cannot be extended and expanded to include telephone wires reaching to the whole world from the defendant's office . . . A standard which would forbid the reception of evidence if obtained by other than nice ethical conduct by government officials would make society suffer and give criminals greater immunity than has been known heretofore." Justices Brandeis, Holmes, Butler, and Stone dissented. Mr. Justice Holmes expressed the minority opinion when he called wire-tapping a "dirty business." He went on: "We have to choose, and for my part I think it is a lesser evil that some criminals should escape than that the Government should play an ignoble part." Mr. Justice Brandeis in his dissent said: "The duty of the Federal courts to see that the law is not violated precludes evidence secured by a conspiracy in which the United States is engaged." Justices Stone and Butler also wrote dissenting opinions. In April, the Supreme Court, in a decision written by Mr. Justice Sutherland found the use of the padlock legal, declaring: "It is no answer to the suit to say that the owner did not participate in the criminal act." It was generally agreed that the padlocking of premises for a six-month period, where liquor violations had been committed, would render great aid in the fight on bootlegging.

NEW YORK. In September, an acrimonious debate took place between Mayor Walker, of New York, and Assistant Attorney-General Willebrandt as a result of the charge of the latter that the administration was making no efforts to arrest and prosecute owners of speakeasies. Mayor Walker easily won first honors when he pointed out that since the beginning of his administration on Jan. 1, 1926, the police in the precinct in which night clubs were located had filed complaints with the Department of Justice and submitted evidence of violations of the Prohibition law in 1593 cases. In only 22 of these cases did the Department of Justice obtain injunctions. In the autumn Mrs. Willebrandt seemed to take a particular interest in New York and sent a special Federal attorney to prosecute Prohibition cases. It was generally conceded that the move was political for the effort was not long sustained. The medical examiner's figures for deaths from alcoholism in New York showed that, up to September, 1518 deaths had been due to this cause. The medical examiner's office attributed these deaths largely to the Government's policy of poisoning commercial alcohol to make it unfit for beverage purposes. In 1927, alcoholism was the cause of 719 deaths as compared with 87 deaths in 1918, 95 in 1919, and 84 in 1920 (the year of the passage of the Eighteenth Amendment).

FIGHT ON AMENDMENT. The Association Against the Prohibition Amendment took steps during the year to expand its programme, the most important move being the appointment of

Henry H. Curran, of New York, as its president and general director. In May the Association indicated the new scope of its activities by announcing the addition of 21 new board members and passing resolutions favoring the modification of enforcement acts in the individual States and the creation of State agencies for the distribution and sale of liquor on the Canadian model. Pierre S. du Pont continued as chairman of the executive committee. On December 31, the association made public its plans for the year 1929. It declared its intention to spend \$100,000 in an elaborate investigation into the effects of Prohibition, not only in the United States, but in England, France, Italy, Norway, Denmark, Belgium, and Finland. The study was to include the financial and economic aspects of Prohibition, as well as its psychological, political, and social sides.

STATISTICS. In its fourth annual survey, the Moderation League indicated its conviction that drunkenness has increased to the pre-Prohibition level; that drunkenness among the young is "far above anything ever known in this country"; that conditions in the dry States are much worse than in the wet States; and that arrests for drunkenness per capita in New York City are "much less than in the other large cities of the nation." The report for the year was based on information received from police departments of 584 places, in which arrests for drunkenness increased from 164,125 in 1924 to 707,104 in 1927. In the 388 places for which figures were available from 1914 to 1927, the report states that arrests for drunkenness were higher in 1927 than in any pre-war year except the boom year of 1916. The 1916 peak was 559,364 arrests and the 1927 figure was 557,369.

With regard to conditions in the so-called dry States, the report declares that they were very much worse in 1927 than they were in 1914.

In the places reporting from dry States, there were 106,072 arrests for drunkenness in 1914; 59,941 in 1919; and a new high level of 184,327 in 1927. . . . One of the interesting things disclosed by the survey is that while the low point of drunkenness in the former wet States was reached in 1920, the first year of the Eighteenth Amendment, yet in the former dry States—States which had some kind of a State-wide dry law before the Amendment was passed—the low point of drunkenness was in 1919 before National Prohibition. In other words, in the dry States the increase in drunkenness had already begun in the first year of National Prohibition.

DURANT PRIZE. William C. Durant, automobile manufacturer, made public in September an offer of \$25,000 for the best plan for Prohibition enforcement. On December 26, Major Chester C. Mills, formerly Federal Prohibition Administrator for the New York District, was announced the winner. Malcolm D. Almack, of the Palo Alto (Calif.) High School, was announced the winner of the \$5000 school prize. Mr. Mills's plan for enforcement was concerned largely with the checking of the diversion of industrial alcohols for the illicit manufacture of intoxicating beverages. He divided his proposal under four heads. 1. With regard to the issuance of permits—The Government should make every effort to ascertain the purposes for which industrial alcohols are being used. The Government should even have resources for supervising the manufacture of the articles for which permits have been granted. The issuance of permits should be placed in the hands of the local administrator. 2. With regard to enforcement—The Coast Guard has

been successful in checking the importation of foreign liquors and should be continued. As for controlling the manufacture of domestic liquors, in each case this is a local problem and should be treated as such. Each district should be watched and analyzed to determine consumption and sources of supply. 3. As for the political aspects—The supervision of the enforcement machinery must be taken out of politics. 4. A detailed method for controlling the diversion of industrial alcohol—The independent denaturing plant has no place in the industrial scheme and it should be eliminated. It purchases its alcohols from licensed distilleries and since it cannot compete for legitimate business it is often compelled to sell its goods to bootleggers.

The leading form of diversion is under the cover of permits allowing firms to manufacture articles from specially denatured alcohol. To control these, Mr. Mills suggested the following: "I believe that strict supervision of the manufacturing activities of these permit holders and the requirement that they notify the local administrator in sufficient time to enable him to supervise the manufacture will practically eliminate their opportunities to divert specially denatured alcohol to the bootlegger." It is interesting to note that in the contest, 23,230 plans were submitted. Some of the proposals were fantastical and called for the use of the Army and Navy, the employ of a Prohibition dictator, and capital punishment as the penalty for the sale of intoxicating beverages. Some 1500 persons urged that the Government manufacture and sell intoxicants; better foreign cooperation was urged by 1392 persons; there were 19,108 recommendations for education and propaganda, etc., etc. The prize award committee consisted of the following:

Chairman, W. O. Thompson, president emeritus, Ohio State University; William H. Allen, Jane Addams, Senator William E. Borah, Bruce Barton, George Gordon Battle, Dr. S. Parkes Cadman, Senator Carter Glass, Maj. Gen. Harbord, William G. McAdoo, Robert L. Owen, Owen Roberts, Elmer Schlessinger, G. P. Whaley, and Dr. Stephen S. Wise.

The Prohibition authorities at once threw cold water on the whole project. They indicated their belief that Prohibition enforcement did not depend upon the shutting off of a single source of supply; that as soon as one door was closed another one was immediately opened. They indicated that Mr. Mills was wrong in saying that the source of the evil was the diversion of industrial alcohols, that in fact the chief trouble at the present time was the manufacture of "wildcat" alcohol. The New York *World* pointed out very illuminatingly: "And certainly the Prohibition service knows by this time that the more success it achieves in shutting off diversion of industrial alcohol and in shutting off rum-running from Canada and Europe, the more promptly it will encourage the manufacture of alcohol in a million wildcat stills, which will make the problem of enforcement more complex than ever." It is questionable whether Prohibition enforcement was very far advanced at the end of the year 1928.

DEBATE. Additions to the literature of Prohibition were voluminous. Prof. Irving Fisher was responsible for a third volume replete with statistics of a rather doubtful character, to prove that poverty was gone, our morals were better, etc., and all because of Prohibition. Prof. Ray-

mond Pearl wrote an interesting study on the psychology of Prohibition in the December *Mercury* when, by an examination of the figures of alcoholic beverage consumption, he showed that while the areas under State-wide prohibitory laws were increasing, the American public was drinking more and more. For example, in 1870 the consumption per capita was 7.7 gallons while in 1917 it was 20 gallons. On the other hand, in 1870, 3.08 per cent of the American population was living under State-wide prohibition laws while in 1917, 35.27 per cent were so living. His conclusion is: "The fundamental element of American societal psychology regarding Prohibition is that the people want both a prohibitory law and liquor too."

Mr. Henry F. Pringle had an interesting article in the November *Harper's* called, "Vice and the Volstead Act." Prof. Lee McBain published *Prohibition, Legal and Illegal* in which he pointed out that there was no immediate prospect for the repeal or modification of the Eighteenth Amendment. The most that might be hoped for was the legislative or administrative failure of the enforcement machinery. He devoted a necessary chapter to the prevalent loose talk about States' rights in which he neatly dismissed the subject with the following: "There is nothing sacrosanct about States' rights. The States derive their rights neither from nature nor from God. The liberty of the States is, like the liberty of the individual, wholly a question of political expediency." Governor Smith's frank discussion of the failure of enforcement was responsible for considerable space being devoted to the Canadian and Swedish systems. Among the articles of note may be mentioned those appearing in the New York *Times* of September 2, 9, and October 14 and the New York *Tribune* of September 16 and November 18. The *Current History* for July, August, September, and October contained a number of articles of greater or less merit on the question of enforcement and the moral effects of Prohibition. See ANTI-SALOON LEAGUE; WOMEN'S CHRISTIAN TEMPERANCE UNION; UNITED STATES.

PROTESTANT EPISCOPAL CHURCH. A religious denomination representing the Anglican communion in the United States, of which the Church of England is the parent church, and which was brought to America with the Jamestown colonists in 1607. The first American service from its Book of Common Prayer, however, was held in the year 1579, on the first Sunday after Trinity, on the Pacific coast near the present site of San Francisco, when the Rev. Francis Fletcher, chaplain of the fleet under command of Sir Francis Drake, conducted service, preached a sermon, and celebrated Holy Communion. The Virginia colony was permanently established with regular ministrations of the Church in 1607, and, despite the absence of a colonial episcopate, the Church, under English clergymen, maintained a firm foothold for 170 years. In 1785, the first American bishop was consecrated in Scotland, and three years later two more were consecrated. The Church completed its organization at a convention in Philadelphia in October, 1789, at which the constitution and name were adopted, and a Book of Common Prayer was set forth. The Episcopal Church maintains active missionary enterprises in Japan, China, Liberia, Mexico, the Philippines, Alaska, Hawaii, Brazil, the Canal Zone, Cuba, Porto Rico, Haiti, the Dominican Republic, the Virgin Islands, and Palestine, and is

represented by establishments in 10 important European centres. Its domestic missionary activities include work among the foreign-born, American Indians, Negroes, mountaineers, in mill communities, and a wide range of social service. Five colleges and many educational institutions represent the interest of the Church in this field.

The government of the Church centres in a General Convention which meets triennially. The affairs of the Church between sessions are conducted by a National Council made up of 16 representatives elected by the General Convention, of whom four are bishops, four priests, and eight laymen, supplemented by eight others named by the eight provincial synods. This Council conducts its work with the aid of three major departments, missions, religious education, social service, and three others, finance, publicity, and field. The Council is also the Board of Directors of the Domestic and Foreign Missionary Society, conducted through the Department of Missions and Church Extension. The presiding bishop of the Church, elected by the General Convention, is also president of the National Council. The whole work of the Church is incorporated in a general church programme adopted triennially.

Operating on a balanced budget, the Church, in 1927, reported total expenditures amounting to \$3,593,089. Of this sum, the total expenditure for missions, domestic and foreign, was \$2,819,074, divided in practically even amounts between the domestic and foreign fields. The number of missionaries supported in whole or in part by appropriations through the Department of Missions during the year 1927 was as follows: American missionaries abroad, 189 men and 245 women; native staff abroad, 1266 men, 621 women; American missionaries in the United States, 526 men, 117 women; native staff in the United States, 101 men, 2 women, making a total of 3067 persons. During the year 47 new missionaries were appointed.

In 1928 there were reported 6237 clergy, an increase of 30 over the preceding year. The total number of communicants was 1,241,828, an increase of 22,887 over the preceding year. The total contributions to all causes within the Church were \$45,928,056, an increase of \$1,184,213 over the preceding year. There were 6000 Church schools with 487,505 pupils, under the direction of 58,477 Sunday-school teachers. The fifteen theological seminaries of the Church reported an increase of 9 in the number of candidates for the ministry.

The National Council is assisted in its work by a group of co-operating agencies. The Woman's Auxiliary, through its triennial thank offering, inaugurated in 1889, contributed in 1928 for the years 1925-28, the sum of \$1,101,450.40, as compared with \$912,841 in the preceding triennium. Other co-operating agencies of the Church are the Brotherhood of St. Andrew, for men; the Daughters of the King; the Guild of St. Barnabas, for nurses; the Churchwomen's League for Patriotic Service; the Knights of St. Paul, the Knights of St. John, the Knights of Washington, and the Order of Sir Galahad, for boys; the Girls' Friendly Society in America, for girls and young women; and the Young People's Fellowship, for young people in general. The Church Mission of Help is notable among affiliated organizations dealing with a wide range of Church interest and activity. The Church publishes *The Spirit of Missions*, *The Church at Work*, *Findings in Re-*

ligious Education, and *Bulletins* of the National Council, together with material dealing particularly with each department of the National Council. Six independently owned publications make an important contribution to the life of the Church; they are *The Living Church*, *The Churchman*, *The Witness*, *The Southern Churchman*, all weeklies; *The American Church Monthly*, and *The Chronicle*, monthlies. In addition, there are 80 monthly diocesan publications in the home field and a score of others in the mission field.

The General Convention of the Church held its triennial meeting in Washington, D. C., in October, 1928. The most important work before the Convention was the completion of the Prayer-Book revision begun in 1913. It also continued the Commission on Faith and Order and appointed a new commission to confer with Methodist and Presbyterian groups in the interest of church unity. A maintenance budget amounting to \$4,224,670 a year was adopted to carry on the world-wide work of the church during the triennium in progress and plans for raising \$3,000,000 for advance work were made. The Convention gave consideration to such vital topics as marriage and divorce, rural work, labor and industry, world peace, and young people in the Church, and took appropriate action. In connection with the Convention there was held an Institute of Religion in which about 3000 persons registered for study classes. The next session of the Convention was scheduled for September, 1931, in Denver, Colorado.

The year 1928 was marked by the death of seven bishops of the Church: The Rt. Rev. Ethelbert Talbot, D.D., Bishop of Bethlehem, the oldest prelate of the entire Anglican Communion, and sometime presiding bishop, who was succeeded by his coadjutor, the Rt. Rev. Frank William Sterrett, D.D.; the Rt. Rev. Henry B. Delany, D.D., Suffragan Bishop of North Carolina; the Rt. Rev. Charles M. Beckwith, of Alabama, who was succeeded by his coadjutor, the Rt. Rev. William G. McDowell, D.D.; the Rt. Rev. Joseph H. Johnson, D.D., of Los Angeles, who was succeeded by his coadjutor, the Rt. Rev. W. B. Stevens, D.D.; the Rt. Rev. William A. Guerrey, D.D., of South Carolina; the Rt. Rev. George A. Kinsolving, D.D., of Texas, who was succeeded by his coadjutor, the Rt. Rev. C. S. Quin; and the Rt. Rev. John Le Mothe, D.D., of Honolulu. The General Convention meeting in Washington in October elected the following priests to vacant Missionary Sees: The Rev. Norman S. Binstead, as Bishop of Tohoku; the Rev. Thomas Jenkins, D.D., for Nevada; and the Rev. George H. Thomas, for Wyoming, who, however, declined the election. During the year, also, the Rev. Albert S. Thomas was elected Bishop of South Carolina, the Rev. J. I. B. Larned, Suffragan Bishop of Long Island, and the Rev. Frank E. Wilson, first Bishop of the newly created diocese of Eau Claire. The headquarters of the National Council are in the Church Missions House, 281 Fourth Avenue, New York City.

PROTOGEROFF, ALEXANDER. Macedonian autonomist leader, assassinated at Sofia, Bulgaria, July 7. He was the head of the movement for the independence of Macedonia, and held almost unlimited power in Macedonian circles and an influential but unofficial position in Bulgaria. It was asserted that he was killed by opponents who desired to renew action against Jugo-Slavia, or perhaps in revenge for one or another of

numerous political murders laid at the door of Protogeroff. He was a Bulgarian general in the World War, when that country was allied with Germany, Austria-Hungary, and Turkey, and after the armistice he placed himself at the head of the radical Macedonian autonomist movement. After the War, Jugo-Slavia demanded his extradition from Bulgaria, charging him with brutality and sedition during the Bulgarian occupation of eastern Serbia, but the Government at Sofia refused to accede to the demand.

PRUSSIA, prűsh'a. A constituent republic of the German Republic; a kingdom of the German Empire until the October Revolution of 1918; proclaimed a republic Nov. 13, 1918. Capital, Berlin. Area, Apr. 1, 1925, 112,625 square miles, as compared with 135,134 square miles before the War; population, according to the census of 1925, 38,120,173, as compared with 40,165,219 in 1910. The later figures for area and population are exclusive of the Saar district, Eupen and Malmedy, and the territory of Upper Silesia which was ceded to Poland; showing a loss to Prussia, as a result of the Treaty of Versailles, of 21,645 square miles and a population of 4,601,626. The movement of population in 1926 was: Births, 780,621; deaths, 472,334; marriages, 300,804. The chief cities with their populations in 1925, according to the census of that year, are Berlin, 4,024,165; Cologne, 700,222; Breslau, 557,139; Essen, 470,524; Frankfort-on-Main, 467,520; Düsseldorf, 432,633; and Hanover, 422,745.

The area under the principal crops and the yield in metric tons for 1926 were as follows: Wheat, 2,322,594 acres, 1,620,258 tons; rye, 8,918,003 acres, 4,937,677 tons; barley, 1,940,571 acres 1,387,851 tons; oats, 5,813,652 acres, 4,434,431 tons; potatoes, 4,533,390 acres, 21,579,018 tons; hay, 6,928,344 acres, 11,356,573 tons.

In 1926 vineyards had an acreage of 39,639 with a yield of 4,023,282 gallons of wine valued at 17,771,969 marks. On Dec. 1, 1926, the livestock included: Cattle, 9,604,891; sheep, 2,724,678; swine, 13,238,163; goats, 2,033,255; horses, 2,670,942; and poultry, 47,210,127. The chief minerals are coal, lignite, iron ore, and salt. The railway mileage, which has been taken over by the Federal Government, is about 20,000. The revenue and expenditure for 1927-28 balanced at 3,645,030,959 marks. The Government is under a Diet and a State Council, the members of the former being elected for four years by secret and direct ballot on the basis of proportional representation. The latter is elected by the provincial assemblies on the basis of one for every 50,000 inhabitants. The executive, which exercises the functions of the former king, is vested in the ministry, which is appointed by the Prime Minister elected by the Diet. As a result of the elections of Dec. 7, 1924, the following parties were returned: Social Democrats, 114; Centre (Catholics), 81; German National party, 109; National Socialists, 11; German People's party, 45; Democrats, 27; Communists, 44; Economic party, 11; German Hanoverians, 6; and Polish party, 2; total 450. The Prime Minister in 1923 was Otto Braun (Socialist, appointed Apr. 4, 1925).

PSYCHIATRY AND CRIME. See CRIME.

PSYCHICAL RESEARCH. The minority which in various countries was interested in the investigation of this field continued to be divided in various ways. First into those who make it a religion (Spiritualists) and, second; those to

whom it is a scientific inquiry (Psychical Researchers), though of course the classes shade into each other. The former, once numerous in the United States, had become very much reduced in numbers, while in England, where the cult did not so much flourish, of late years it was on the increase. The great majority of scholarly men and women (comparatively few in number) who have devoted much time and attention to Psychical Research have become convinced of, or impressed by, one or several claimed types of the "supernormal." But these, again, are divided, roughly speaking, into two groups—those who accept one or more types of mental phenomena only (such as telepathy, premonitions, clairvoyance, psychometry, and facts supernaturally derived by mediumship, whether through telepathy or discarnate intelligences), and those who, while generally acceding to one or more types of these, are also convinced of the genuineness of one or more species of physical phenomena (such as telekinesis, levitation, spirit photography, ectoplasm, and the materialization of spirit forms). These cross-divided groups (the Spiritualists almost universally accepting physical phenomena) in turn shade into each other, as when a man convinced of several mental species, accepts no physical one more than tentatively.

Those of America and England who accept physical phenomena are more generally disposed to credit the bulk of them to spirits, while savants on the Continent of Europe as a rule attribute them to freakish biological processes and little-understood physical forces. Particularly in Germany, where Baron von Schrenck-Notzing and other defenders of disputed physical cases had their organ, the *Zeitschrift für Parapsychologie*, the war was going on, though less merrily since Count von Klinckowstroem and other skeptics had lost theirs, the *Zeitschrift für Kritischen Okkultismus*, which died during the year for lack of an "angel." The champions of the physical mediums find it hard to explain the skeptics except on the assumption that these have hard hearts and a penchant for exposing. The skeptics usually hold that the convinced mean well but are little acquainted with the possibilities of conjuring and are the victims of sensory illusion.

Dr. Rosenbusch and others claimed to have caught Eleonora Zugun in fraud, and Countess Wassilko and Prince came to her defense. Vinton and Schrenck-Notzing crossed swords over the Schneider Brothers. Prince reported unfavorably on Rudi Schneider, Frau Silbert, and Guzik. To the support of the first came Dr. Gerda Walther and, in a moderate degree, R. Lambert; to that of the second rallied Dr. Tischner and Prof. Walter. The medium, Kraus, confessed that he hoodwinked the Baron and the latter declared that the confession was false. The detailed confession of Munnings in London was similarly confronted. In America, out of the four official commissions, embracing 19 persons, which investigated the "Margery" case, 17 persons stand opposed, but J. M. Bird still continued to publish a quantity of literature in defense, and she had many followers.

In the field of mental phenomena, which require no "conditions" hampering experiment, and where investigation is more a matter of trained common sense, the waters continued comparatively calm. Skeptics abound, but none were found ready to attempt the task of explaining

away any of the great stenographically-reported and critically-analyzed cases. Yet even newspaper leaders foster the legend that Houdini, the genial magician, was an authority in this field and could duplicate anything which the best of psychics have done under scientific auspices.

Among the leading organizations concerned with psychical research of a more or less scientific character, there may be listed in random order: The Society for Psychical Research (London), the Boston Society for Psychic Research (Boston), the American Society for Psychical Research (New York), the British College of Psychic Science (London), the National Laboratory of Psychical Research (London), the Institut Métapsychique International (Paris). All of these issue publications. Probably the best organ of the Spiritualistic religious cult abroad is *Light* (London), and possibly the best in the United States is *The National Spiritualist*.

BIBLIOGRAPHY. Among the more notable of recent books, some for one reason, some for quite another, and not all of equal critical value, are the following:

Life Beyond Death, by C. Dayton Thomas; *The Bridge*, by Nea Walker; *Leonard and Soule Experiments*, by Lydia W. Allison; *Notre Sixieme Sens*, by Charles Richet; *How to Go to a Medium*, by E. J. Dingwall; *Noted Witnesses for Psychic Occurrences*, by Walter Franklin Prince; *The Either-Or of Spiritualism*, by Mrs. St. Clair Stobart; *Chinese Ghouls and Goblins*, by G. Wiloughby-Meade; *Psychical Science and Religious Belief*, by J. Arthur Hill; *The Scripts of Cleophas*, by Geraldine Cummins; *The Great Problem*, by George Lindsay Johnson.

PSYCHOANALYSIS. A most active controversy continued within the field of psychoanalysis concerning the status of lay analysis. Freud's belief was that in the majority of cases the physician's help and medical knowledge are unnecessary; that psychoanalysis is not a particular branch of medicine but a part of general psychology. The question still under discussion by members of the International Psychoanalytical Association was whether the association could officially approve and train non-medical analysts to work under medical supervision and consultation after previous medical diagnosis of the patient's symptoms. A draft of rules for training in psychoanalysis had been prepared and circulated for criticism by the International Training Commission.

The status of the psychoanalytic movement in America was thus described by C. P. Obendorf (*The International Journal of Psychoanalysis*, 1928, vol. ix, p. 275):

From my acquaintance with the psychoanalytic movement in other countries, it is safe to say that nowhere has the interest in psychoanalysis been so diffuse and at the same time so superficial and confused as in the United States. During the past year, the tendency to cloud the perplexed public mind has been decidedly increased by the considerable publicity which attended the visits of several European analysts, including Ferenczi, Rank and Adler to this country. Moreover, the charlatans, who have always followed on the trail of very great movement in science, have not been slow to utilize Freud's position in regard to lay analysts, to excuse their totally inadequate preparation of any kind.

On the other hand, the psychoanalytic teachings in regard to the necessity for more minute and penetrating anamneses, the influence of sexual impulses, and the conflicts engendered between instinctive trends and cultural demands, have been adopted by lecturers on

social topics and child guidance so that these psychoanalytic positions have become commonplaces in our social thought and discussions.

During the year the New York Psychoanalytic Society arranged an introductory course of lectures on psychoanalysis which were attended by eighteen physicians who had had previous training in neurology or psychiatry.

Among the important books published during the year are *Contributions to Analytical Psychology*, by C. G. Jung, being the second English collection of the author's essays; and *Index Psychoanalyticus*, 1893-1926, by J. Rickman, honorary secretary of the Institute of Psychoanalysis, London. The latter work contains about 10,000 references to English, German, French, Dutch, Hungarian, Italian, Polish, Russian, Spanish, Swedish, and Portuguese books and papers, classified according to author. The index is considered to be of exceedingly great value to all workers in psychoanalysis. *Psychoanalysis for all*, by R. Urbantschitsch (translated by A. Eiloart), is a book intended to give a peep behind the scenes and gives a fairly satisfactory account of the psychoanalytic process. *Symbolism: Its Meaning and Effect*, by A. N. Whitehead, was published by the Cambridge University Press.

PSYCHOLOGY. NOTES AND NEWS. The thirty-seventh annual meeting of the American Psychological Association was held at Columbia University on Dec. 27-29, 1928, in conjunction with the eighty-fifth annual meeting of the American Association for the Advancement of Science. This was the largest meeting in the history of the American Psychological Association with a registration of 537 members. The presidential address was delivered at the close of the annual banquet at the Hotel Pennsylvania, by Prof. Edwin G. Boring, of Harvard University. At the business meeting held on the evening of December 27, Prof. K. S. Lashley, of the Institute for Juvenile Research, Chicago, was elected president for 1929. It was decided to merge the 1929 Association meeting with the International Congress of Psychologists which was to meet in September of that year. (See below.) Fewer papers were read than at previous meetings, in order that time might be available for profitable discussion. Round-table discussions were held on: The First Course in Psychology, Personality, Consciousness and Behavior, Psychophysical Measurement Methods, and Psychology of Aesthetics. The first of these discussions was of particular interest because the nature of the first course in psychology has been the subject of much criticism in recent years. There was a sharp difference of opinion as to whether the course should be preparatory to more advanced courses in psychology, or whether it should prepare the student to meet his life's problems. It was recognized that one single course could scarcely do both. There were 12 papers read on Experimental Psychology, 10 on Animal Psychology, five on each of the following: General Psychology, Psychology of Emotions, Child Psychology, Mental Tests and Measurements, and Abnormal Psychology. There were four papers on Educational Psychology. At two sessions for Informal Reports of Graduate Students, there were 19 papers read.

A special seminar was conducted at the Columbia University Summer Session of 1928 for the discussion of "The First Course in Psychology." Special fellowships were awarded to

nine persons in various universities who represented various points of view. It was planned to repeat the seminar in the Summer Session of 1929. The results of the discussion were to be published later. The project was directed by Prof. R. M. Elliott, of the University of Minnesota.

The Congress International de Psychologie appliquée announced a meeting of the Congress in Paris, March 21-27, 1929, postponed from October, 1928.

The Fifth International Congress of Psychotechnics was held at Utrecht, September 10 to 14, 1928. The recognized languages were French, German, and English. The problems of character and temperament occupied a prominent place on the programme. The proceedings of the Fourth Congress held at Paris, 1927, was published and could be procured from M. J. M. Lahy, Secretary General, 22 Avenue de l'Observatoire, Paris (14), E.

The Sixth Annual Meeting of the Council for the Education of Exceptional Children was held in Toronto, Canada, February 23 to 25, 1928. Special classes in the schools for various kinds of defectives were open for inspection, and addresses and papers were delivered on many topics concerning the special problems involved in the teaching of defectives.

The National Conference on Character Education in Schools was held at Teachers College, Columbia University, on Mar. 2 and 3, 1928. The proceedings revealed a wide and serious interest in character education among those who deal with youth in school, church, welfare organizations, and the home.

A conference on Experimental Psychology was held at Carlisle, Pennsylvania, on Mar. 30 and 31, 1928, under the auspices of the Division of Anthropology and Psychology of the National Research Council. The state of laboratory psychology was discussed and recommendations made for a committee on Experimental Psychology to obtain and administer funds for the promotion of research.

Arrangements were completed for the Ninth International Congress of Psychology, to be held at Yale University, New Haven, Connecticut, Sept. 1 to 7, 1929. This was to be the first meeting of the Congress in America, previous meetings having been held in Paris, 1889, London, 1892, Munich, 1896, Paris, 1900, Rome, 1905, Geneva, 1909, Oxford, 1923, and Groningen, 1926. The President of the Congress was James McK. Cattell, of New York City; Secretary, Edwin G. Boring, Harvard University.

Plans were made for a psychological study of the Australian aborigines, under the auspices of the Australian Research Council. Dr. S. D. Porteus, Director of the Psychological Clinic of the University of Hawaii, was invited to initiate the work.

Dr. Madison Bentley, of the University of Illinois, was appointed Sage Professor of Psychology at Cornell University to occupy the chair held for nearly 35 years by the late E. B. Titchener.

Bird T. Baldwin, Research Professor of Educational Psychology and Director of the Iowa Child Welfare Research Station at the University of Iowa, died May 12, 1928.

The completion of 35 years of service in teaching and research in psychology by Professor Margaret F. Washburn, of Vassar College, was commemorated by the publication of a volume of

studies by her friends and students. The work appeared as a special volume of the *American Journal of Psychology*, of which Professor Washburn had been an editor for a number of years. The book contains 32 articles on theoretical and experimental topics, together with a bibliography of the writings of Professor Washburn.

Dr. George M. Stratton, Professor of Psychology at the University of California, and Dr. Lewis M. Terman, Professor of Psychology at Stanford University, were elected to membership in the National Academy of Sciences. Prof. Wolfgang Koehler, of the University of Berlin, and Prof. Karl Pearson, of the University of London, were elected foreign honorary members.

GENERAL AND THEORETICAL PSYCHOLOGY. One of the questions of most general interest during 1928 has been that concerning the nature of mental organization. The view of Prof. Charles Spearman, University of London, that mental organization is comprised of one or more general factors and a number of specific factors, and the opposing one of Prof. E. L. Thorndike, of Columbia University, that specific factors are adequate without the assumption of general factors have generated much theoretical discussion and a number of experimental attacks upon the problem. (See C. L. Hull, "Aptitude Testing," also S. C. Dodd, "The Theory of Factors," *Psychol. Review*, 1928, for a brief discussion.) Attempts were being made to determine whether such qualities as speed of function, accuracy, perseveration, honesty, and the like bear the earmarks of general or specific factors. *Cross Roads in the Mind of Man*, by T. L. Kelley, Stanford University Press, 1928, presents an excellent survey of both experimental and theoretical material.

The controversy concerning the nature of the mental endowment of human beings aroused by the attack of Watson and others upon the traditional instincts a few years previously still continued. A number of studies of early infancy now in progress, notably that of Gesell in the Psychoclinic at Yale University, would eventually make positive contributions to the solution of this important but difficult question. The activities of the Child Development Institute, New York City, where a few infants are kept under 24-hour observation, will contribute most valuable data. At the University of Michigan, plans were under way for a similar project which would make possible continuous observations of a large number of infants. Meanwhile, discussion continues as evidenced by the articles appearing in the *Psychological Review* (1928) and other similar journals.

Gestalt psychology and its place in general psychology was a matter of active discussion. Interest in this problem was stimulated by the appointment of Prof. Kurt Koffka, one of the German exponents of Gestalt, to fill the William Allan Neilson Professorship at Smith College. A book on the subject was announced by an American publisher under the authorship of Wolfgang Koehler, Professor of Philosophy, University of Berlin, another of the German leaders of the Gestalt movement.

The conditioned reflex, offered as a mechanism of learning in animals through the studies of Pavlov and others, was beginning to usurp the place held by the Laws of Association as the explanation of human learning. The studies of conditioning in infants and adults had seemed to

some investigators to offer not only a substitute explanation for learning by association but to show how behavior patterns, particularly of emotional type which have been thought to be native, could be acquired in early infancy and childhood through a conditioning process. The monumental work of Pavlov is now available to the English world in *Conditioned Reflexes*, translated by G. V. Anrep (Oxford University Press, 1927).

Psychology: Its Facts and Principles, by Prof. H. L. Hollingworth, Columbia University (New York, 1928), represents an interesting attempt to systematize the subject in the light of the more recent movements in psychology. "It seeks at once to eliminate the dualism of mind and body, so characteristic of traditional psychology, and also to reconcile in a single synthesis the subjective and objective approaches to the study of the mind. A single set of simple working concepts based on observation and experiment serves to describe results in both the introspective and behavioristic fields." Another volume which presents a clear picture of the present status of psychology is *An Historical Introduction to Modern Psychology*, by Gardner Murphy (New York, 1928).

ANIMAL PSYCHOLOGY. Productive work was rapidly increasing in the animal laboratories, particularly in the United States, owing mainly to the fact that many of the puzzling problems of human psychology can be attacked in the work on animals. The laws of human learning have been called into serious question during the last few years, especially the so-called "Law of Effect" which states that the satisfaction following a reaction tends to stamp in that reaction so that on a later occasion that particular reaction will tend to be repeated. Likewise the "Trial and Error" conception of learning has been subjected to critical analysis, largely through the discovery of learning through insight in the high animals (see Wolfgang Koehler, *The Mentality of Apes*). The studies of animals were aiding materially in the solution of these problems. For example, the researches at the Institute of Psychology at Yale University under the direction of Prof. R. M. Yerkes was throwing light upon the question of insight versus trial and error as a means of solving problems. Work of a similar nature was being done at Clark University by Prof. W. S. Hunter. In the Animal Laboratory of the Department of Psychology at Columbia University, under the direction of Prof. C. J. Warden, a series of studies was almost completed on the motivation of animal behavior. The strength of the hunger impulse, thirst impulse, sex and maternal impulses had been studied and measured and their relative potency in determining behavior evaluated. The Animal Laboratory at Stanford University, under Dr. C. P. Stone, was continuing its study of the development of sex activity in animals and the factors which influence the strength of the sex impulses.

The Neurological Department of the College of Physicians and Surgeons of Columbia University, under Dr. Frederick Tilney, began a series of researches on the factors contributing to the sense of direction in animals. This project grew out of the detailed examination of the sensory and other capacities of Helen Keller, by Dr. Tilney, in which certain clues to a sense of direction were detected. After a lapse of a few years from the active work on animals carried on by Dr.

John B. Watson, Johns Hopkins University was planning to initiate studies in animal learning.

At the University of Toronto, Dr. W. E. Blatz had made a comparison of the behavior of human subjects and chimpanzees in similar, controlled situations. Some 28 children had completed the first stages of the experiment. The approach of the children to the experimental situation was very much like that of the apes, except for their use of language. This was very significant for an analysis of the learning process.

EDUCATIONAL PSYCHOLOGY. One of the outstanding events in the field of Educational Psychology in 1928 was the publication of *The Twenty-Seventh Yearbook* of the National Society for the Study of Education, under the leadership of Prof. Lewis M. Terman, of Stanford University. Two volumes of this yearbook were devoted to an attack upon the problem of nature and nurture as they affect achievement. The large individual differences that have been found in tests of intelligence and achievement have raised the issue as to their causes.

The issues which are involved are obviously of great consequence for educational theory and practice, since they are part and parcel of the age-old problem as to the relative influence of nature and nurture upon human destinies. If the differences found are due in the main to controllable factors of environment and training, then, theoretically, at least, they can be wiped out by appropriate educational procedures which it would then become our duty to provide. On the other hand, if they are due primarily to differences in original endowment, then the duty of the school is clearly to provide for differentiated training which will take these native differences into account (p. 1).

The first volume of the *Yearbook* is devoted to the "Influence of Nature and Nurture upon Intelligence" and presents a series of studies of the various factors influencing intelligence-test scores such as membership in a given family, social environment, race, schooling, health, physique, and special training or coaching. The second volume covers the "Influence of Nature and Nurture upon Achievement," and includes studies of the effects of intelligence, effort, amount of time spent on study, and cost of instruction.

The contribution of the whole project to educational theory and practice is expressed in the following quotation (p. 6):

Readers who do not sufficiently appreciate the inherent difficulties and complexities of the problem, particularly the difficulty of securing factual data that are at once crucial and unambiguous, will perhaps be disappointed in the lack of perfect consistency in the results of various contributors. For certainly it must be admitted that no final answer to the nature-nurture question has been attained, or even approximated. The most that can justly be claimed is that the bounds of our knowledge have been in some measure extended. Anyone who has reasonable regard for the fundamental importance of the problem will be grateful for any advance in our knowledge, however slight, which the contributions of this Year Book have accomplished. It is conceivable that the elusive nature of the problem is such as to preclude for a long time to come, if not forever, a complete and final solution. One needs to cultivate patience and the faculty of suspending judgment.

The problems of adult education are receiving increasing attention under the stimulation of the American Association for Adult Education. A part of the work of the Institute of Educational Research, Teachers College, Columbia University, on the problem is reported in *Adult Learning* (New York, 1928) by E. L. Thorndike and others. The following statements taken from

Chapter 13 on practical applications will indicate the significance of this interesting research:

In general, nobody under forty-five should restrain himself from trying to learn anything because of a belief or fear that he is too old to be able to learn it. Nor should he use that fear as an excuse for not learning anything which he ought to learn. . . . In general, teachers of adults of age 25 to 45 should expect them to learn at nearly the same rate and in nearly the same manner as they would have learned the same thing at fifteen to twenty. . . . The provision of opportunities whereby adults can learn those things which they are able to learn, and which it is for the common good that they should learn is a safe philanthropy and a productive investment for the nation. . . . Age, in itself, is a minor factor in either success or failure. Capacity, interest, energy, and time are the essentials.

Along with this interest in the adult, there goes an equally strong interest in the mental characteristics and development of the infant and pre-school child. Research was in progress in the Institutes for Child Welfare at the University of Iowa, Columbia University, University of Minnesota, University of California, and elsewhere. The Yale Psycho-Clinic, under the direction of Dr. Arnold Gesell, has published a further report of the findings in *Infancy and Human Growth*. They had prepared a schedule of 135 behavior manifestations which are characteristic of normal stages of development during the first year of life, and which may serve as the basis of a measuring scale for this early period.

An excellent review of *Child Psychology*, by B. T. Baldwin, appears as No. 11 of vol. 25 of the *Psychological Bulletin* (1928). It is in the form of an annotated bibliography of 539 titles.

MENTAL TESTS. In the field of mental tests, progress was made in the development of instruments for the measurement of character and personality traits, and of special aptitudes. These problems were usurping much of the interest formerly directed to the more general measures of intelligence. *Aptitude Testing*, by Prof. Clark Hull, of the University of Wisconsin, gives an excellent account of the problems involved in the measurement of special aptitudes, the statistical procedure to be used, and the methods of standardizing and validating the tests. The need for a book of this type is reflected in a statement from its preface:

Of course it is possible for one who has no scientific understanding of test methods to learn the simple procedures of test administration and test scoring, or even to carry on a certain amount of routine manipulation of test data, but there is a growing recognition of the dangers involved in this kind of work. The rapid multiplication of well-planned measurement courses in teachers' colleges and universities may be expected in time to remove all excuse for testing on the lower amateur levels. That time, in fact, seems to be drawing very near, and its advent is being materially hastened by the publication of textbooks which go beyond the superficial aspects of the subject.

Studies in Deceit, by Profs. Mark A. May and Hugh Hartshorne (New York, 1928), embodies the results of several years of research supported by the Institute of Social and Religious Research, and conducted in the Institute of Educational Research (Psychological Division) at Teachers College, Columbia University. The problem assigned the investigators was "the study of the actual experiences of children which have moral and religious significance and the effects for periods of time of the moral and religious influences to which children, youth, and adults have been exposed," and the "application of the objective methods of the laboratory to the measurement of conduct under controlled condi-

tions." Trustworthiness was chosen for intensive study. The techniques which were developed for that purpose will serve as the model for the construction of tests for measurement of other character traits. The book contains also the results of studies to determine the effects of moral and religious instruction as well as a general discussion of moral values in contemporary education.

Devices for the measurement of interest had reached a stage where their practical utility has been demonstrated. The work at Stanford University, California, resulted in the publication of the Vocational Interest Blank which may be used for the detection of interest in eighteen or more vocations. A central bureau for the scoring and interpretation of the test records was being established at Stanford University. Among the vocations for which the interest test was applicable are those of lawyer, engineer, minister, banker, artist, office worker, salesman, and school-teacher.

APPLIED PSYCHOLOGY. The Australian Institute of Industrial Psychology organized in September, 1927, whose director was A. H. Martin, University of Sydney, completed its first year. Many problems of vocational guidance and industrial efficiency were successfully handled. The Institute is similar in organization to the National Institute of Industrial Psychology in England.

One of the most promising new activities in Applied Psychology was the coöperative research project of the Yale University and Columbia University law schools on the subject of Evidence and its psychological analysis. Several reports had already been published and others were in preparation. They appear in the *Law Reviews* of the two institutions. Among the problems studied thus far were motivation, habit, memory, and character in their relation to the interpretation of evidence.

The Committee on Personnel Methods of the American Council on Education held a conference on Coöperative Experiments in Personnel Methods, at Briar Cliff Manor, N. Y., in April, 1928. A high-school record card and a college record card were demonstrated. These with a manual of instructions were ordered printed for distribution during the summer. A report of a sub-committee concerned devices for the measurement of personality. It recommended that, in the absence of satisfactory character tests, rating scales should be improved and used until they could be replaced by real test instruments. A rating scale together with proper instructions for using it was described. This material was published as a supplement to the *Educational Record* (July, 1928).

A significant attempt to determine the relationship between scholarship and business success appears in the article by Walter S. Gifford in *Harper's Magazine* (May, 1928), entitled "Does Business Want Scholars?" The conclusions were based on records of success of thousands of college graduates. The answer to the question is that scholarship and business show a high positive correlation.

To be sure, they deal with averages just as actuarial statistics do in estimating the "expectation" of life for the individual. A high-stand scholar may miserably fail and a low-stand scholar may notably succeed, but, taking the averages, the men in the first tenth of their respective classes began in about five years to earn more than the other college men, and continued to increase

their advantage as the years went on. This was true, though not quite to the same degree, of men in the first third of the classes, whereas the men in the lowest third earned least, and the longer they were in business the slower their earnings rose. From this it is deducted that a man in the highest tenth in scholarship at a college has two chances in ten of standing in the highest ten in salary as compared with the one chance in twenty-two which the man in the lowest tenth has.

That Russia had become actively engaged in practical psychological work was indicated by the programme of the first Federal Conference on Psychophysiology of Labor and Vocational Guidance held in Moscow, May 29 to June 3, 1928. Discussions and conferences were held on such topics as Methods of Mental Testing, Vocational Guidance and Selection, Exercise, Fatigue, and Physiology of Work. Special studies were made of the use of the hammer and file in industrial work after the manner of the analyses made in the United States by means of the micromotion picture. Another conference was arranged for 1929 in Leningrad.

During the year 1928, renewed interest had developed in the psychological and physiological problems of physical and mental work. The application of metabolism measuring methods to determine the energy cost of different kinds of work and work under different conditions has brought forth practical results in the laboratories of A. V. Hill, England, Atzler in Berlin, and the Industrial Fatigue Research Board of England. *Arbeitsphysiologie*, a new German periodical, was inaugurated in February, 1928, for the publication of such material. It has an international board of coöperating editors.

ABNORMAL PSYCHOLOGY. The activities of psychologists interested in the field of Abnormal Psychology in 1928 were directed mainly toward the detection, measurement, and correction of personality defects which lead into more serious mental disturbances if corrective measures are not applied. Thus, in *The Psychology of the Adolescent*, by L. S. Hollingworth (New York, 1928), there is a treatment of the normal course of development of the adolescent with a great deal of attention paid to the factors which may lead from the normal to the distorted personality during this period. Likewise, in *Modern Psychology: Normal and Abnormal*, by D. Leary (Phila. 1928), the normal and the abnormal are linked in a single discussion. And J. J. B. Morgan in *The Psychology of Abnormal People* (New York, 1928), treats cases of abnormality as deviations from the normal rather than as phenomena in a class by themselves. *The Psychology of Personality*, by E. Bagby (New York, 1928), is a definite attempt to interpret the more serious personality disorders in terms of exaggerations of normal personality trends. He makes much use of conditioned reactions, disabling fears, worries, day-dreaming, inferiority feelings, defense reactions, etc., in his analysis of personality.

As an instance of a mild disability which may lead into serious personality difficulties, stuttering and other speech defects were receiving renewed attention along with defects of vision, hearing, and other handicaps. The nature of the attack in this field was indicated in *The Problem of Stuttering*, by J. M. Fletcher (New York, 1928), and *Speech Pathology with Methods in Speech Correction* (Expression Co., 1928).

Among the tests constructed for the purpose of detecting significant personality traits was

that of G. W. Allport for the measurement of Ascendancy and Submission (*Journal of Abnormal and Social Psychology*, 1928, vol. 23, p. 118). An actual study of the predictive value of a number of such personality measuring scales was made by E. G. Flemming for use by college students (*Archives of Psychology*, No. 96, 1928).

SOCIAL PSYCHOLOGY. The developments in the field of Social Psychology during the year 1928 might appear rather intangible to the casual reader, although the careful observer can see lines of active research which will eventually provide the foundation for a sound social psychology. The work of F. H. Allport (*Social Psychology*, 1924) has had its influence in directing interest toward experiment and measurement and away from speculation.

These studies in social psychology were taking the form of tests primarily—tests of character and temperament and of the influence of one person upon another or of one group upon another group. In fact, the tremendous accumulation of data from the administration of tests to individuals, to racial, social, and occupational groups, to delinquents, to groups differing in age, sex, and environmental contacts, might all be considered the data of social psychology. Typical of such material are the following articles appearing in the *Journal of Abnormal and Social Psychology*: Watson, G. B., "Do Groups Think more Efficiently than Individuals?" (p. 328); Lehman, H. C. and Witty, P. A., "Sex Differences in Credulity," (p. 356); Travis, L. E., "The Influence of the Group upon the Stutterer's Speed in Free Association" (p. 45); Lima, Margaret, "Racial Differences in Intelligence in Minnesota" (p. 68); Allport, G. W., "A Test for Ascendancy-Submission" (p. 117).

Out of this wealth of test material, there was developing a more critical attitude toward the concept of racial superiority and a search for environmental and training factors that might account for racial differences in test scores. An ambitious experimental project under the direction of Franz Boas, Professor of Anthropology in Columbia University, was intended to discover the relative native endowment of certain Indian tribes, certain Negro groups, and groups of selected whites. This project involved the construction and standardization of tests for each racial group, rather than the use of tests standardized upon cultured whites.

The book by F. H. Hertz, *Race and Civilization* (New York, 1928), reviews the arguments for race superiority from the Greeks to the present. The Social Science Research Council was supporting a project for the construction of a scale to measure attitudes toward Negroes and the application of this scale to the measurement of the attitudes characteristic of various population groups.

The attention of social psychologists was being directed toward the study of abnormalities and delinquencies and their causes. An extensive investigation of "Personality Traits and Community Factors in Juvenile Delinquency" was begun by the Institute for Juvenile Research, of Chicago, with the support of the Social Science Research Council. The review of the literature on Criminology by R. H. Gault (*Psychological Bulletin*, 1927, vol. 24, p. 692) contains 101 titles on such matters as the effects of capital punishment, parole, probation, sterilization, pardons, etc., on the community.

A very practical attack upon social problems was made possible by the establishment of a fund of \$36,000 at the School of Education of New York University for a three-year study of the effect of a boys'-club programme upon a local community, and its boy problems in New York City. The fund was to be used primarily for establishing fellowships and scholarships. The work was to be directed by Frederick M. Thrasher and an advisory council of experts in this field of research.

The investigation will be unique in that it will attempt a complete community case-study in which all factors will be considered in their interrelationships, normal as well as pathological. A recently established boys' club (with a total capacity of 9000 boys) will be used as a laboratory for the study, and the problems of the community will be investigated before the development of the club and during the first three years of its program.

PUBLIC AFFAIRS, INSTITUTE OF. Inaugurated in 1927 at the University of Virginia as an experiment for the purpose of advancing the popular understanding of public questions and stimulating in the public mind a more vital interest in public matters, particularly the domestic problems of the United States. The attendance at the 1928 session consisted of 116 delegates from Virginia, appointed by Governor Byrd; 21 delegates appointed by organizations in other States; 276 registered members from 37 States and 6 foreign countries; and 812 registered visitors, not including the summer-session students. Membership in the Institute is open to men and women who have taken part in public life and to those who are interested in any phase of public affairs, national, State, or local. Members may attend all lectures and addresses delivered during the session and any two of the round-table discussion groups. The programme of the 1928 session was planned in accordance with the announced purpose of the Institute to limit its discussions primarily to a study of governmental problems of national, State, and local concern, and to certain economic and social conditions underlying them. However, since Latin-American affairs are so intimately connected with the economic and industrial progress, as well as with the national policy of the United States, a round table and open forum on this subject was introduced and proved one of the most interesting features of the institute, and it was predicted that some phase of foreign relations would be a feature of each recurring session. The programme in 1928 consisted of 11 round tables, each of which met every other day during two weeks; an open forum each morning; and an address each evening.

Following is a list of the round-table subjects with their leaders: The Agricultural Problem, Dr. John D. Black, professor of agricultural economics at Harvard University; Women in Modern Society, Dr. Aurelia Henry Reinhardt, president of Mills College, California; Our Latin-American Relations, Dr. John H. Latané, professor of American history at Johns Hopkins University; Municipal Management, Dr. Thomas H. Reed, professor of municipal government at the University of Michigan; County and Township Government, Dr. Kirk H. Porter, associate professor of political science at the University of Iowa; Political Parties, Dr. A. R. Hatton, professor of political science at Northwestern University; the Tax problem, the Hon. Mark Graves, tax commissioner of the State of New

York; The Influence of the Press in Public Affairs, Dr. Victor Rosewater, journalist, editor, and former publisher of the *Omaha Bee*; The Economic and Industrial Development of the South, Dr. Bradford Knapp, president of the Alabama Polytechnic Institute; Arbitration of Commercial Disputes, Dr. Wesley A. Sturges, of the Yale University Law School; and Aeronautics, Dr. Otto Schreiber, head of the Air Law Institute, Koenigsberg University, Germany.

Evening addresses were delivered as follows: The Crisis of Democracy, Count Carol Sforza; Awakening the Public Conscience to Proper Municipal Management, the Hon. George A. Levy; The Solid South—Its Cause?—Its Future? Mrs. Sarah Lee Fain; Sectionalism and National Politics, the Hon. Ralph R. Lounsbury; Public Welfare and Municipal Administration, Dr. William J. Hickson; The South at the Parting of the Ways, Dr. William E. Dodd; Political Parties, the Hon. Richard Washburn Child; Newspaper v. Political Corruption, Boyd Gurley; The Agricultural Problem in the Middle West, the Hon. L. Jesse Dickinson; Is There a Genuine Agricultural Problem? the Hon. Evans Woollen; Governmental Fundamentals, the Hon. Finis J. Garrett; Is Prohibition a Party Issue? Mrs. Nellie Taylor Ross; The Law of Aeronautics, Dr. Otto Schreiber; Arbitration of Commercial Disputes, Lee J. Eastman.

The invited speakers, in addition to those who participated in the round table and open forum, numbered 107. The officers of administration were: Dr. Edwin Anderson Alderman, president of the University of Virginia; Dr. Charles Gilmore Maphis, dean of the summer quarter and director of the Institute; and an advisory board composed of 29 prominent educators and recognized leaders in public affairs, selected from all sections of the country and from the two political parties.

PUBLIC FINANCE, UNITED STATES. American public finance, during the year 1928, afforded no characteristic features. The year was really a period of continuation of what had been begun and attempted during the preceding year or two. Neither in the development of a tax programme nor in the collection of international debts due the United States was there any material innovation. From the standpoint of routine Treasury management, the year was commonplace. Operations in continuation of refunding and the like presented no new problems. The experience of the twelve months did throw some light upon the working of changes already made and in the real distribution of tax burdens within the United States, but it did not afford any decisive solutions even of these.

The total ordinary receipts of the year were slightly in excess of those of the preceding season so far as most sources of revenue were concerned, but in the two largest—income tax and customs—there was a slight shrinkage. The net outcome was to leave receipts about \$87,000,000 behind those of 1927, but the reduction thus actually suffered was not as great as had been expected or provided for, so that it still left a margin when compared with expenditure. The table on page 634 furnishes a general view of the development of the revenue situation within recent years.

Included in the receipts from miscellaneous sources were the proceeds of the sale of foreign obligations, which ran nearly as heavily as ever,

ORDINARY RECEIPTS, FISCAL YEARS 1920 TO 1927
[On basis of daily Treasury statements (unrevised)]

Year ending June 30—	Customs	Income and profits taxes	Miscellaneous internal revenue	Miscellaneous revenues, including Panama Canal Proceeds from foreign obligations	All other	Total
1920.....	\$322,902,650	\$3,944,949,288	\$1,460,082,287	\$74,296,622	\$892,334,542	\$6,694,565,389
1921.....	308,564,391	3,206,046,158	1,390,379,823	114,821,206	605,121,383	5,624,932,961
1922.....	356,443,387	2,068,128,193	1,145,125,064	75,222,068	464,185,439	4,109,104,151
1923.....	561,928,867	1,678,607,428	945,865,333	232,989,156	587,744,697	4,007,135,481
1924.....	545,637,504	1,842,144,418	953,012,618	221,774,675	449,475,487	4,012,044,702
1925.....	547,561,226	1,760,337,823	828,638,068	183,637,677	459,773,890	3,780,148,684
1926.....	579,430,093	1,982,040,088	855,599,289	194,237,957	351,448,263	3,962,755,690
1927.....	605,499,983	2,224,992,800	644,421,543	206,089,173	448,390,943	4,129,394,441
1928.....	569,000,000	2,173,400,000	621,000,000	205,900,000	468,900,000	4,042,300,000

EXPENDITURES CHARGEABLE AGAINST ORDINARY RECEIPTS

General Expenditures	1927	1928
Legislative establishment	\$ 19,678,325.13	\$ 16,402,048.28
Executive proper	612,197.93	589,497.19
State Department	16,497,668.60	11,607,071.23
Treasury Department	151,560,333.78	195,648,941.27
War Department	360,808,776.71	390,540,803.49
Department of Justice	24,819,057.70	27,600,254.81
Post Office Department	189,037.77	276,692.81
Navy Department	318,909,096.28	331,335,491.98
Interior Department	302,706,745.19	298,999,534.09
Department of Agriculture	156,287,304.95	159,914,696.27
Department of Commerce	30,939,749.02	34,383,165.32
Department of Labor	9,921,644.26	9,821,480.97
Veterans' Bureau	391,470,413.72	401,324,833.17
Other independent offices and commissions	35,442,771.15	35,681,462.45
District of Columbia	37,566,520.57	39,399,622.44
Total	\$1,857,409,642.76	\$1,953,525,595.77
Deduct unclassified items	448,920.63	198,554.39
Total	\$1,857,858,563.39	\$1,953,327,041.38
Interest on public debt	\$ 787,019,578.18	\$ 731,764,476.30
Refunds of receipts:		
Customs	20,320,524.37	21,856,901.13
Internal revenue	117,412,172.61	148,286,060.13
Postal deficiency	27,263,191.12	32,080,202.46
Panama Canal	8,305,345.04	10,448,879.83
Operations in special accounts:		
Railroads	1,042,746.21	619,721.67
War Finance Corporation	27,065,781.61	3,813,040.77
Shipping Board	19,011,397.11	34,881,713.16
Alien property funds	496,117.92	351,151.52
Grain Corporation .....	.....	.....
Sugar Equalization Board .....	.....	.....
Purchase of obligations of foreign governments .....	.....	.....
Adjusted service certificate fund	115,219,352.30	111,817,839.69
Investment of trust funds:		
Government life-insurance fund	47,315,972.70	61,701,568.44
Civil-service retirement fund	425,194.65	109,272.28
District of Columbia teachers' retirement fund	289,980.43	513,917.75
Foreign-service retirement	87,267.50	80,938.85
General railroad contingent	870,677.84	1,179,957.39
Total ordinary	\$2,974,029,674.62	\$3,103,264,854.83
Public debt retirements chargeable against ordinary receipts:		
Sinking fund	\$333,528,400.00	\$354,741,300.00
Purchases from foreign repayments	19,254,500.00	19,068,000.00
Received from foreign governments under debt settlements ..	159,961,800.00	162,736,050.00
Received for estate taxes .....	.....	1,500.00
Purchases from franchise tax receipts (Federal Reserve and Federal intermediate credit banks)	1,231,834.78	618,367.05
Forfeitures, gifts, etc.	5,578,310.00	3,089,803.25
Total	\$519,554,844.78	\$540,255,020.30
Total expenditures chargeable against ordinary receipts ..	\$3,493,584,519.40	\$3,643,519,875.13
Surplus (+) or deficit (—).....	+\$635,809,921.70	+\$398,828,281.06

of railroad securities which had been reduced, and of several other items, all sufficient to show in the aggregate a total of about \$469,000,000 or some \$21,000,000 more than in 1927.

Included in the collections of tax arrears are sums which amounted to a very considerable amount indicative of the continuation of great activity in settling obligations which had been

allowed to fall behind. Considerable progress was made in working toward a contemporary position in tax collections. Even at the close of the year, however, the department was still very much behind in its work. Customs duties at \$569,000,000 were still about \$36,000,000 lower than in 1927 as a consequence of a falling off in importation, partly the outgrowth of very severe customs ad-

ministration and partly the result of new and higher duties on imported goods which had been imposed at the instance of President Coolidge as embodied in proclamations issued by him for the purpose of raising the duties which Congress had authorized him to alter when it included the so-called flexible tariff sections in the act of 1922. Shrinkage of internal revenue, although very moderate indeed, notwithstanding the fact of an increase in individual incomes subject to taxation was largely the result of falling off of internal duties which had previously been very heavy but had now reached the turning point and started on a decline.

FEDERAL EXPENDITURES. The expenditures for the year amounting to \$1,953,000,000 were obviously considerably lower than outgoes for the preceding year. Accompanying tables furnish a survey of the principal items of expenditure for 1928 as compared with those for 1927. The total of expenditure was \$1,953,525,000 exclusive of the public debt and operations on special accounts. As the table on page 634 shows, the principal items of outlay did not, however, run very differently from those of the preceding year.

THE SURPLUS. For several years, discussion of the Treasury surplus had at times assumed a very acute position. There was a feeling that regular surpluses were being accumulated for the purpose of reducing the public debt, notwithstanding that it was asserted in connection with the budget that such surpluses were incidental or incalculable. During the income-tax revision of 1927, sharp controversy arose between Secretary of the Treasury Mellon and the Chamber of Commerce of the United States, the latter body asking for a much larger cut in taxation than had been proposed and asserting that the surplus situation would allow it. In the revision in question, it was officially stated that curtailments arranged for would practically eliminate the surplus. The following table furnishes the details of surplus development for the years 1920-1928 and shows that whereas for the fiscal year 1927 the indicated surplus was \$635,000,000, the largest sum in any year on record, the surplus for the fiscal year of 1928 was officially stated as \$398,000,000, a figure which was exceeded only by the returns for 1927 and 1924.

ORDINARY RECEIPTS, EXPENDITURES CHARGEABLE AGAINST ORDINARY RECEIPTS, AND SURPLUS 1920 TO 1928

[On basis of daily Treasury statements (unrevised)]

Fiscal year	Total ordinary receipts	Expenditures chargeable against ordinary receipts	Surplus
1920 ..	\$6,694,565,388	\$6,482,090,191	\$212,475,197
1921 ..	5,624,932,960	5,538,209,189	86,723,771
1922 ..	4,109,104,150	3,795,302,499	313,801,651
1923 ..	4,007,135,480	3,697,478,020	309,657,460
1924 ..	4,012,044,701	3,506,677,715	505,366,986
1925 ..	3,780,148,684	3,529,643,446	250,505,238
1926 ..	3,962,755,690	3,584,987,873	377,767,817
1927 ..	4,129,394,441	3,493,584,519	635,809,922
1928 ..	4,042,348,156	3,643,519,875	398,828,281

This surplus, however, related to a period ending with June 30, 1928, and computations for the year 1929 indicated a further reduction of it, while during the first month of the winter session of Congress of 1928, recommendations made by the Treasury Department for refunds of taxes illegally collected called for appropriations which if fully disbursed would probably eliminate much of the balance on hand and in the opinion of some Treasury authorities may even

go so far as to create a deficit. It was undoubtedly true that with transactions as large as those involved in the income-tax system it was difficult to estimate the contingent liabilities of the Treasury Department, so that an indicated surplus was at all times a desirable adjunct to the easy management of fiscal affairs. The situation may be summed up at all events by stating that, despite reductions in taxation, there was still a large indicated surplus with controversial discussion as to contingent liability.

PUBLIC DEBT SITUATION. During the year 1928, the French Government continued to defer ratification of the debt-funding treaty that had been previously concluded, but it maintained the policy already established in 1927, of making regular payments on the obligations named by the treaty, just as if the document had in fact been ratified. Payments also were made, as agreed, by other countries, with which treaties had been established as a result of the efforts of the World War Debt Funding Commission, and with the funds thus placed in the hands of the department (and with such contributions from surplus as could be made from time to time), further reductions were made in the outstanding public debt. During the year 1928, the total amount of reduction was \$905,833,703, the entire debt being reduced from \$18,510,174,226 gross, to \$17,604,290,562 gross. This reduction was smaller than had been the case in any recent year and was of course effected in some measure by the use of amounts received from foreign countries which were stated as about \$161,000,000 interest and \$47,000,000 principal. The total realized from the sale of railroad and other securities was about \$175,000,000, however, and this taken with the proceeds of foreign payments thus constituted a substantial fraction of the entire amount of debt reduction. According to the official statement, the amount discharged from ordinary receipts was \$540,246,020. The table on page 636 shows the debt situation in condensed form. Note should be made of the final conclusion of the process of refunding the Third Liberty Loan, the outstanding bonds of that loan being converted into notes and certificates of comparatively short term.

TREASURY FINANCE. Taken in conjunction with the refunding of the Second Liberty Loan in 1927, the disposal of the Third Liberties remaining outstanding, which took place during 1928, made a great change in the general character of the outstanding debt. It left the long-term bonds of the First and Fourth Liberty Loans still in existence on the same basis as originally, while the post-war Treasury bonds of long term would not begin maturing until 1940, but it effectually put the great bulk of the remainder of the World War financing, amounting to \$5,000,000 more or less, into short-term notes and certificates with a series of maturities spaced during the coming decade in such a way as to necessitate practically continuous operations.

This process of refinancing had been developed during the years soon after the close of the War, and was in line with the special method of Treasury management which had been worked out by Secretary McAdoo and his aids, some of the latter holding over from the Democratic into the Republican administration and bringing with them the same methods of finance that had become well known during the McAdoo period. Such continuous refunding was desirable only in

PRELIMINARY STATEMENT OF THE PUBLIC DEBT OUTSTANDING OCTOBER 31, 1928, BY
ISSUES
[On basis of daily Treasury statements (unrevised)]

Bonds:		
Consols of 1930	\$ 599,724,050.00	
Panama's of 1916-36	48,954,180.00	
Panama's of 1918-38	25,947,400.00	
Panama's of 1961	49,800,000.00	
Conversion bonds	28,894,500.00	
Postal Savings bonds	15,875,560.00	
		\$ 769,195,690.00
First Liberty loan of 1932-47	1,939,153,050.00	
Fourth Liberty loan of 1933-38	6,284,040,600.00	
		8,223,193,650.00
Treasury bonds of 1947-52	758,984,300.00	
Treasury bonds of 1944-54	1,036,834,500.00	
Treasury bonds of 1946-56	489,087,100.00	
Treasury bonds of 1948-47	498,087,750.00	
Treasury bonds of 1940-43	859,042,950.00	
		3,136,986,600.00
Total bonds		12,129,375,940.00
Treasury notes:		
Series A-1930-32, maturing Mar. 15, 1932	1,210,553,200.00	
Series B-1930-32, maturing Sept. 15, 1932	615,095,700.00	
Series C-1930-32, maturing Dec. 15, 1932	607,399,150.00	
Adjusted service—		
Series A-1930	25,800,000.00	
Series A-1931	52,500,000.00	
Series B-1931	70,000,000.00	
Series A-1932	123,400,000.00	
Series A-1933	123,400,000.00	
Civil service—		
Series 1931	34,200,000.00	
Series 1932	14,400,000.00	
Series 1933	39,300,000.00	
Foreign service—		
Series 1933	529,000.00	
		2,914,577,050.00
Treasury certificates:		
Series TD-1928, maturing Dec. 15, 1928	224,972,000.00	
Series TD2-1928, maturing Dec. 15, 1928	187,183,500.00	
Series TD3-1928, maturing Dec. 15, 1928	175,522,000.00	
Series TM-1929, maturing Mar. 15, 1929	360,947,000.00	
Series TM2-1929, maturing Mar. 15, 1929	210,884,000.00	
Series TM2-1929, maturing Mar. 15, 1929	549,310,700.00	
Series TJ-1929, maturing June 15, 1929	308,758,000.00	
Series TS-1929, maturing Sept. 15, 1929		2,017,577,200.00
Treasury savings certificates:		
Series 1923, Issue of Sept. 30, 1922	7,654,443.55	
Series 1923, Issue of Dec. 1, 1923	23,427,797.65	
Series 1924, Issue of Dec. 1, 1923	94,373,184.30	
		125,455,425.50
Total interest-bearing debt		17,186,985,615.50
Matured debt on which interest has ceased:		
Old debt matured—issued prior to Apr. 1, 1917	1,988,120.26	
Second Liberty-loan bonds of 1927-42	19,685,150.00	
Third Liberty-loan bonds of 1928	91,572,400.00	
3½ per cent Victory notes of 1922-23	22,100.00	
4 per cent Victory notes of 1922-23	2,005,750.00	
Treasury notes	1,250,000.00	
Certificates of indebtedness	305,900.00	
Treasury savings certificates	2,683,000.00	
		119,464,420.26
Debt bearing no interest:		
United States notes	346,681,016.00	
Less gold reserve	156,039,088.03	
	190,641,927.97	
Deposits for retirement of national bank and Federal Reserve bank notes		
Old demand notes and fractional currency	41,493,957.00	
Thrift and Treasury savings stamps, unclassified sales, etc.	2,045,485.77	
	3,514,533.46	
		237,695,904.20
		\$17,544,145,939.96

the event that a continuously declining, or at all events a steadily-maintained low, rate of interest could be made to prevail in the open market. However, the year 1928 witnessed the inevitable transition from exceedingly plentiful money and low rates of interest to tight money and high rates. This was inevitable in view of the tremendous bank expansion that had been in progress, but it of course brought with it certain necessary consequences in connection with Treasury finance. Whereas the Second Liberty Loan had been converted in 1927 into refunding notes on a basis as low as 3½ per cent, the Treasury financing which grew out of the Third Liberty transactions in 1928 had to be placed at rates

varying from 3¼ per cent to 4½ per cent with subsequent certificate transactions at an even higher rate, the final offering being 4¾ per cent, while it became more and more necessary to have the reserve banks support the market for Treasury obligations by standing ready to take them off the hands of large holders or dealers subject to a so-called "repurchase agreement" whereby the reserve banks bound themselves to return such obligations to those from whom they had been taken, should the latter at any time desire such action.

In these circumstances, the Treasury refinancing necessarily became a great burden upon the reserve banks, even at the higher rates which the

department had named, while the volume of subscriptions for Treasury operations tended to fall off in a striking manner. The close of the year, with its extraordinarily high money rates in the open market, apparently opened a period of increasing difficulty in Treasury finance due to the necessity of coping with difficult banking conditions.

BUDGET ESTIMATES. Estimates of outlay for the year 1928-29 were as usual prepared by the

Treasury together with a forecast of the probable situation in the year 1929-1930. As thus presented, the indicated expenditures for the year 1930 were figured at \$3,227,000,000 as against \$3,252,000,000 for the preceding year, an indicated probable surplus of about \$30,000,000. Accompanying this was the official indication that reduction of Federal expenditures, except in so far as the future refunding of the debt might bring economies, had practically reached its

SUMMARY OF RECEIPTS AND EXPENDITURES FOR THE FISCAL YEAR 1928, ON THE BASIS OF DAILY TREASURY STATEMENTS (UNREVISED), AND ESTIMATED RECEIPTS AND EXPENDITURES FOR THE FISCAL YEARS 1929 AND 1930

	1928	1929	1930
Net balance in the general fund at the beginning of fiscal year			
Receipts:	\$ 234,057,410	\$ 265,526,981	\$ 234,057,410
Ordinary	4,042,348,156	3,831,735,661	3,841,295,829
Public debt	2,691,322,593 *	2,207,668,887	1,028,856,218
Total	\$6,967,728,159	\$6,304,931,529	\$5,104,209,457
Expenditures:			
Ordinary	3,103,264,855	3,252,274,119	3,227,652,047
Public debt chargeable against ordinary receipts	540,255,020	542,471,350	553,067,600
Other public debt	3,058,681,803 *	2,276,128,650	1,089,432,400
Net balance in the general fund at close of fiscal year ..	265,526,981	234,057,410	234,057,410
Total	\$6,967,728,159	\$6,304,931,529	\$5,104,209,457
POSTAL SERVICE	693,633,921	707,000,000	735,000,000
Postal receipts	725,714,123	790,495,830	806,209,325
Postal expenditures			
Deficiency in postal receipts ^b	32,080,202	83,495,830	71,209,325

* Other public-debt expenditures and public-debt receipts, as shown in this statement, are exclusive of \$4,164,017,000 Treasury certificates issued and retired within the same fiscal year.

^b The postal deficiency for 1928 and the estimated postal deficiencies for 1929 and 1930 are included in the ordinary expenditures shown above.

GENERAL FUND OF THE TREASURY, JUNE 30, 1928 (REVISED FIGURES)

In Treasury offices:			
Gold	\$158,195,548.59		
Standard silver dollars	7,227,931.00		
United States notes	3,021,104.00		
Federal Reserve notes	653,410.00		
Federal Reserve bank notes	101,210.00		
National-bank notes	53,700.00		
Subsidiary silver coins	2,691,642.51		
Minor coins	2,845,037.66		
Silver bullion (at cost)	7,782,476.74		
Unclassified (collections, etc.)	2,207,454.98		
			\$184,784,505.48
In Federal Reserve banks:			
To credit of Treasurer of United States	23,647,738.55		
In transit	6,276,634.04		
			29,924,372.59
In special depositories:			
Account of sales of Treasury bonds and certificates of indebtedness			245,730,779.32
In National-bank depositories:			
To credit of Treasurer of United States	6,765,348.93		
To credit of other government officers	18,724,939.58		
In transit	2,566,978.76		
			28,077,267.27
In foreign depositories:			
To credit of Treasurer of United States	83,304.52		
To credit of other government officers	288,807.58		
In transit	370.00		
			372,482.10
In treasury of Philippine Islands:			
To credit of Treasurer of United States	871,176.73		
In transit	933.38		
			872,110.11
			\$489,761,516.87
Deduct current liabilities:			
Federal Reserve note 5 per cent fund (gold)	\$150,632,176.90		
Less notes in process of Redemption	932,115.00	149,700,061.90	
National-bank note 5 per cent fund	24,835,349.34	5,362,953.34	
Less notes in process of redemption	19,472,396.00	3,800,213.02	
Treasurer's checks outstanding		8,851,108.76	
Post Office Department balance		7,776,151.89	
Board of trustees, Postal Savings System, balances		50,545,764.88	
Balance to credit of postmasters, etc.		2,430.00	
Retirement of additional circulating notes (Act of May 30, 1908)		3,532,502.23	
Uncollected items, exchanges, etc.			229,571,186.02
Balance in Treasury June 30, 1928			\$260,190,330.85

imit. Private interest, desirous of income-tax reform, continued however to be of the opinion that further savings were entirely possible, and that the indicated surplus for the year 1929, taking into account most ordinary and extraordinary receipts, was sufficient to warrant an expectation of possible further revision of taxation. The estimates for the year 1930 were presented to Congress at the opening of the session in December 1928 as shown in the table on page 637.

GENERAL FUND OF THE TREASURY. The general fund or current cash condition of the Treasury reflected comparatively few changes of importance. Actual returns as presented in the annual report on the finances were as shown on page 637.

LEGISLATION, NEW AND PROPOSED. The legislation of the year was confined to the so-called Income Tax Amendment Act of 1928 which had already been proposed and passed by the Lower House before the close of 1927. While the Act of 1928 had been looked forward to as making great changes in the burden of taxation, the alterations actually introduced were comparatively few and contrary to expectation were not made retroactive, so that they come into effect first in the returns of 1929 (for the income of 1928).

The major changes in taxes and rates in the Revenue Act of 1928 were as follows:

Corporation income tax: The rate of tax was reduced from 13½ to 12 per cent, applicable to incomes of 1928 and succeeding years. The "specific credit" allowed domestic corporations having a net income of \$25,000 or less was increased from \$2000 to \$3000.

Individual income tax: The maximum net income on which an earned income credit is allowed was increased from \$20,000 to \$30,000.

Automobile tax: The tax of 3 per cent on manufacturers' sales of passenger automobiles was repealed. Admissions and dues: Amounts paid for admissions to theatres and other places of amusements of \$3 or less were exempted from tax as compared with 75 cents or less under the preceding act. On admissions of \$5 or more to prize fights, however, the rate was increased from 10 to 25 per cent. The annual club dues exempted from tax were increased from \$10 to \$25.

Miscellaneous: The amount withheld at the source was increased in the case of certain tax-free covenant bonds owned by non-resident aliens, foreign corporations, and unknown holders. The tax of one cent per gallon on cereal beverages was repealed. The tax was reduced on still wines from 16 cents, 40 cents, and \$1 to 4, 10, and 25 cents, respectively, per gallon according to alcoholic content; and on grape brandy from 60 cents to 10 cents per proof gallon. The special tax on retailers of narcotics was reduced from \$6 to \$3 per annum. The tax on the use of foreign-built boats was repealed, but the term "motor boat" in the Tariff Act of 1922 was defined to include yachts and pleasure boats.

PUBLIC LANDS. See LANDS, PUBLIC.

PUBLIC ROADS, UNITED STATES BUREAU OF. See AGRICULTURE, UNITED STATES DEPARTMENT OF; ROADS AND PAVEMENTS.

PUBLIC SCHOOLS. See EDUCATION IN THE UNITED STATES.

PUBLIC UTILITIES. See FINANCIAL REVIEW.

PUBLISHING. See LITERATURE, ENGLISH AND AMERICAN.

PUGILISM. See BOXING.

PUISEUX, PIERRE-HENRI. French astronomer, died September 28. Born at Paris, July 20, 1895, he studied at the École Normale Supérieure, where he received the D.Sc. degree in mathematics in 1879. He later lectured at the Sorbonne, and was appointed honorary professor on the Faculté des Sciences of the Université de Paris. He was made astronomer at the Paris Observatory in 1907, in charge of charting the sky. Dr. Puisseux was elected to the Paris Academy of Sciences in 1912, and was at one time

president of the French Astronomical Society. Besides his thesis of 1879 on *L'Accélération Séculaire du Mouvement de la Lune*, he wrote *Cours de Cinématique*, and *La Terre et la Lune: Forme Extérieure et Structure Interne* (1907), and he collaborated with Loewy in *L'Atlas Photographique de la Lune* (1896-1910).

PULP, PULP-WOOD INDUSTRY. See FORESTRY; PAPER.

PULITZER PRIZES. See LITERATURE, ENGLISH AND AMERICAN; THEATRE.

PUTNEY, put'nē, ALBERT HUTCHINSON. American lawyer and educator, died at Washington, D. C., October 22. He was born at Boston, Sept. 28, 1872, and was graduated from Yale in 1893, and from the law school of the Boston University in 1895. He practiced in Boston at first, but later moved to Chicago, where he worked from 1899 until 1913, also acting as professor in the Illinois College of Law, 1900-12, and as dean, 1904-12. He was made chief of the Near Eastern Division, of the U. S. Department of State, in 1913, served in this capacity throughout the World War and until 1920. During this time he studied the positions of the smaller European nations, particularly that of Czechoslovakia, in order to formulate the basis upon which the United States could recognize their governments. Dr. Putney served during the same period, until his death, as professor at the National University Law School. He was made dean of the school of diplomacy and jurisprudence, of the American University, in 1920, and he also lectured at the University of Prague during the summer of 1923, on the government and constitution of the United States. Besides being decorated by Rumania and Lithuania, and receiving the D.C.L. degree from De Paul University, and the Ph.D. degree from the American University, he was awarded the Order of the White Lion by Czechoslovakia. Dr. Putney wrote extensively, among his most important works being the twelve-volume *Law Library* (1908), and *Principles of Political Economy* (1909).

QUAKERS. See FRIENDS, RELIGIOUS SOCIETY OF.

QUARANTINES, PLANT. See ENTOMOLOGY, ECONOMIC; HORTICULTURE.

QUEBEC, kwə-bék'. The largest province in Canada, and one of the four original provinces in the present Dominion of Canada; bounded on the west by Hudson Bay and Ontario, on the north by Hudson Strait, on the east by Labrador, and on the south by New Brunswick, the United States, and southern Ontario. Area, as amended by the Labrador Boundary award, 594,434 square miles; population, according to the census of 1921, 2,361,199, of whom 1,038,128 were rural, 357,295 of British origin, and 1,889,090 of French origin. Capital, Quebec. The chief cities with their populations, according to 1926 municipal statistics, are as follows: Montreal, 684,500; Quebec, 126,000; Hull, 35,233; Verdun, 42,247; Three Rivers, 35,000; and Sherbrooke, 25,021.

The provisional figures for the acreage and yield of the most important field crops for the year 1927 were as follows: Wheat, 61,000 acres, 1,141,000 bushels; oats, 1,782,000 acres, 51,856,000 bushels; barley, 125,000 acres, 3,213,000 bushels; rye, 12,200 acres, 222,000 bushels; flax, 2400 acres, 24,000 bushels; mixed grains, 117,000 acres, 3,475,000 bushels; other grains, 208,600 acres, 14,360,000 bushels; potatoes, 159,000

acres, 14,676,000 cwt.; roots, 34,000 acres, 4,940,000 cwt.; hay and clover, 4,153,000 acres, 5,607,000 tons; fodder corn, 88,000 acres, 700,000 tons.

The mineral production of the Province in 1928 amounted to \$37,023,645, or an increase of \$7,899,535 over 1927, with gold and copper in particular showing notable increases. Copper in 1928 was valued at \$4,910,306, as against \$407,146 in 1927; while gold in 1928 was valued at \$1,240,435, as against \$172,214 in 1927.

Quebec is the chief Canadian province in the production of pulpwood, having more than half of the Canadian production. The value of mineral production in 1926 was \$25,750,463. The total imports for consumption in 1925-26 amounted to \$253,428,000; total exports, \$423,235,000. The revenues for 1927 was \$30,924,997.01; expenditure, \$29,078,702.89. The public debt, as of June 30, 1928, was \$58,827,532. Quebec has 5267 miles of railway, including 400 miles of electric tramway. At the head of the Government is a lieutenant-governor appointed by the Governor-General of Canada, who acts through a responsible ministry; legislative power is vested in a bicameral body, a council of 24 members appointed for life, and a legislative assembly of 85 members elected for five years. Quebec is the only province in Canada in which women are not enfranchised or eligible for election to the legislature. Lieutenant-Governor in 1928, N. Pérodeau; Premier, Attorney-General, and Minister of Municipal Affairs, L. A. Taschereau; Lands and Forests, H. Mercier; Treasurer, J. Nicol; Secretary, A. David; Agriculture, J. E. Caron; Colonization, Mines and Fisheries, J. E. Perrault; Public Works and Labor, A. Galipeault; Roads, J. L. Perron; Ministers without portfolio, E. Moreau, L. Lapierre, J. H. Dillon.

QUEEN'S COLLEGE. A college for women at Charlotte, N. C., founded in 1771; non-sectarian in purpose, but under the direction of the Presbyterian Church. The enrollment for the autumn term of 1928 was 319. There were 32 members in the faculty. The income for the year amounted to \$130,000. The library contained 9000 volumes. President, William H. Frazer, D.D., Litt.D.

QUEENSLAND. A state in the Commonwealth of Australia situated north of New South Wales; the second largest of the constituent Australian states. Area, estimated at 670,500 square miles; population, according to the census of 1921, 755,972; estimated, Sept. 30, 1927, 897,419. The movement of population in 1926 was: Births, 19,765; deaths, 8215; marriages, 6428. The immigrants in the same year numbered 87,624 and the emigrants, 78,166. Capital, Brisbane, with a population in 1926 (10-mile radius), of 274,260 (census).

During 1926 there were 1739 state schools (including 13 high schools and 147 provisional schools) with 4230 teachers and an average daily attendance of 108,526. The total value of all crops in 1927 was £14,431,644 as compared with £12,181,917 in 1926. The principal crops are green fodder, sugar cane, corn, wheat, cotton, hay, and bananas. The total value of the mineral production in 1926 was £2,174,187. Since the discovery of the gold fields in 1858 the value of the gold output, to the end of 1926 was £85,234,496. Coal is also an important mineral product (1,221,059 tons produced in 1926), and among the other mineral products are copper, tin, wolfram, lead, cobalt, etc. In 1926-27 the imports amount-

ed to £13,497,779 and the exports to £14,721,176. The registered shipping in 1926 consisted of 173 sailing vessels of 6384 net tons and 74 steamers of 18,207 net tons. On June 30, 1926, 6240 miles of railways were open, of which 5964 were being worked.

Executive power is vested in a governor, who acts through a responsible ministry; and legislative power in a single chamber or legislative assembly of 72 members elected for three years (the legislative council was abolished in 1922). Governor in 1928, Sir T. H. J. C. Goodwin (appointed February, 1927); Lieutenant-Governor, W. Lennon; Prime Minister, W. McCormack.

QUESADA, PRESENTACION. Honduran statesman, died at Tegucigalpa, Honduras, July 15. He was Constitutional Vice President of Honduras, elected after the revolution of 1924, and a leader of the National or conservative party of the country. He was noted in Central America as a jurist. In the election that followed the revolution of 1924, Dr. Miguel Paz Barahona was elected President of Honduras and Dr. Quesada, Vice President, their election being proclaimed by the National Assembly Jan. 20, 1925.

QUICKSILVER. The world production of quicksilver for 1928 was estimated at about 150,000 flasks of 75 pounds each and commanded a price ranging from \$115 to \$135 per flask, or slightly higher than the previous record high price of the metal in 1927. The production in the United States in 1928 was estimated at about 17,000 flasks as against 11,276 flasks valued at \$1,314,782 in 1927 which was the greatest production since 1920 when 13,392 flasks were reported. The War year, 1918, showed a production of 32,883 flasks. A notable tendency during 1928 was the continued increase at the Almaden Mine in Spain which developed its production from 52,500 flasks for the season ended June 1, 1927, to more than 74,000 flasks for the corresponding season of 1927-28. In Italy, production was estimated at about 64,000 flasks with the Monte Amiata District showing increased production.

The quicksilver industry in the United States, especially mines in California and Nevada, flourished during the year and new plants were built, while old mines were reopened. The American industry seemed to be in a satisfactory condition and, in view of the development of the trust or cartel by Italian and Spanish producers able to control about 90 per cent of the world's output, promised to figure more extensively than ever both in domestic and other markets. In 1927 the United States imported 20,207 flasks, valued at \$1,780,134, while in 1928 there were imported 12,656,100 flasks, valued at \$1,572,017. The trust referred to above was reported controlled by the Spanish and Italian governments, the latter operating the Idria Mine. It was reported that this trust would curtail production so as to keep prices at a high level.

RACING. The "sport of kings" retained its strong hold on popular favor in 1928, the meetings conducted at the various tracks in the United States, Great Britain, France, Cuba, and Mexico attracting their customary throngs of turf followers. Edward B. McLean was the leader in purse winning, his stable turning in more than \$250,000. Other owners with goodly earnings were Harry Payne Whitney and Joseph E. and George D. Widener. Reigh Count, owned by Mrs. John D. Hertz, developed into the outstanding

thoroughbred of 1928 in the United States and after the season closed was shipped to England to become acclimated for an attempt to win the famous Ascot Gold Cup. Reigh Count triumphed over all opposition of his own age, three years, in the three principal tests of the year—the Saratoga Gold Cup, Lawrence Realization, and Jockey Club Gold Cup. Reigh Count also won the Kentucky Derby, his total earnings being \$111,040. This wonder horse would have come close to topping the renowned Man o' War in winnings had it not been for sickness and injuries which he suffered before and after the Kentucky Derby.

The champion two-year-old of 1928 was Marshall Field's High Strung, which won both the Belmont Futurity, worth \$97,990 and the Pimlico Futurity, worth \$50,750. Of the older horses, Mike Hall, a four-year-old, made the best showing, the performances of Crusader, Display, Hydromel, and Justice F. being most disappointing. Laverne Fator led the American jockeys in number of winning mounts.

The winners of the principal turf events in the United States were as follows: Futurity, High Strung; Preakness, Victorian; Kentucky Derby, Reigh Count; Hopeful, Jack High; Belmont Stakes, Vito; Withers, Victorian; Saratoga Special, Blue Larkspur; Travers, Petee Wrack; Suburban Handicap, Dolan; Metropolitan Handicap, Nimba; Saratoga Cup, Reigh Count; Brooklyn Handicap, Black Panther; Latonia Derby, Toro; Coffroth Handicap, Crystal Pennant.

Felstead, owned by Sir Hugo C. Owen, won the English Derby in 2:34 2-5, equaling the record set by Call Boy in 1927. Cride Guerre, owned by Ogden Mills, captured the Grand Prix de Paris. The Ascot Gold Cup went to Invershin, the Thousand Guineas to Scuttle, owned by King George, and the Grand National Steeplechase to Tipperary Tim. Billy Barton, an American horse, finished second in the Grand National.

HARNESS RACING. Winnipeg, a Canadian bred pacer, owned by E. J. Baker of St. Charles, Ill., and driven by Palin, set three records in 1928. This horse traveled the fastest race-mile (1:59¼), the fastest mile (1:57¾) and the fastest mile over a half-mile track (2:01). Spencer, a three-year-old, owned by David M. Look of Goshen, N. Y., tied a world trotting record for a mile against time at the Lexington meeting of the Grand Circuit, his mark being 1:59¼. Benelwyn turned in the fastest race-mile for trotters (2:01½). Hollywood Colin, a four-year-old, was the leading race winner among the Grand Circuit trotters.

RACE STUDIES. See **ANTHROPOLOGY**; **ZOOLOGY**, under *Heredity*.

RACQUETS. The racquets season in the United States in 1928 was featured by the visit to America of an English team comprising Hon. C. N. Bruce, J. C. F. Simpson, and P. W. Kemp-Welch. The Americans defeated this team in an international match held in New York City by a score of 3 to 2, but Simpson and Bruce carried off the U. S. doubles title. C. C. Pell saved the singles crown for the United States by conquering Bruce in the final contest. Stanley G. Mortimer, of the United States, defeated Bruce in the final of the classic Gold Racquet Tournament after a thrilling match. The United States national squash-racquets championship was won by Herbert N. Rawlings, of New York City, who defeated Myles P. Baker, of Boston, the defending

title holder, in the final round. The United States team successfully defended the Lapham Trophy in an international match with Canada.

The court tennis season was signalized by the crowning of a new world champion in the person of Pierre Etchebaster, of France, who triumphed over George F. Covey, of England, long supreme in this field of sports, in a challenge match contested at London. Etchebaster previously had visited the United States and taken away the professional title from Jock Soutar, of Philadelphia. The United States national title went to Hewitt Morgan, of New York, while Jay Gould and William C. Wright retained their national doubles championship.

RADCLIFFE COLLEGE. A non-sectarian college for women at Cambridge, Mass., founded in 1879. The enrollment for the autumn of 1928 was 1109, distributed as follows: regular students, 761; graduates, 323; special students, 25. Instruction was given to the students of the college by 215 teachers from Harvard University. The productive funds amounted to \$4,815,286, and the income for college purposes to \$477,691. The library contained approximately 65,000 volumes, exclusive of pamphlets. President, Ada Louise Comstock, A.M., Litt.D., L.H.D., LL.D.

RADIO. See **PHYSICS**.

RADIOBEACONS. See **LIGHTHOUSES**.

RADIO FOG SIGNALS. See **LIGHTHOUSES**.

RADIOGRAPHY. See **PHOTOGRAPHY**.

RADIOLOGY CONGRESS. See **PHOTOGRAPHY**.

RADIO SERVICE. See **AGRICULTURE**, **UNITED STATES DEPARTMENT OF**.

RADIO TELEPHONY AND BROADCASTING. Probably the most important advance in the general field of broadcasting was the inauguration of the re-allocation plan of the 6169 stations in 1928 operating in the United States. This shifting in frequency of the stations was undertaken by the Radio Commission under order of the 1928 Radio Act. The reassignment was worked out in accordance with engineering principles, each of the five zones created by the Act receiving an equal number of channels; some of these channels are rated for "Rural Service" and are allowed high-power stations (up to 25 KW and experimentally up to 5 KW), others are "regional" and still others are "local service," the latter being limited to 100 watts and the regional to 1000 watts. The entire scheme of channel assignments was carried out with the idea of eliminating the well-known whistling interference.

In general, the radio listeners were well pleased with the new plan, most reports being to the effect that conditions are much improved. The General Electric Station, WGY, was, however, so disgruntled by its new assignment that the owners decided to test the legality of the ruling of the Radio Commission and had taken their case to the courts for adjudication.

This year saw the almost universal adoption of crystal controlled transmitters, that is, transmitters which had their frequency set by a small piece of piezo electric quartz. Such a control scheme is vital to the success of the Commission's re-allocation plan, as this calls for strict adherence to the station's specified frequency. Stations departing appreciably from their assigned frequency would have their licences revoked by the Commission.

As an aid to air navigation, radio showed two advances for the year. Accurate and frequent (every hour) weather reports were being sent over most of the eastern airways, so that a pilot knows, without inquiring, just what kind of weather he is heading into. A radio beacon system, having a visually operating indicator in the plane, enables an aviator to keep his plane headed straight for his landing field.

Transatlantic telephony expanded its range and volume; and any telephone subscriber in the United States could talk to a subscriber in nearly any part of Europe; as a special ocean cable was being built, over which it is expected that transatlantic telephony can be carried, it seemed questionable in 1928 whether the radio telephone link would be much more developed.

The Columbia Broadcasting Company further established itself as a competitor to the National Broadcasting Company (the Radio Corporation chain) by acquiring station WABC, which, on a clear channel with full-time operation, will be its key station.

The broadcast-receiver was greatly improved by the practically universal adoption of 60-cycle-power operation; tubes using alternating current for filament heating were used for all amplifiers, and a special "heater" tube was used for detector. To get an output free from distortion, the better sets use a push-pull output stage, the tubes in this stage being power tubes using up to 400 volts in the plate circuit, with a useful output of several watts.

The moving coil, or so-called "dynamic," speaker was finding universal adoption, primarily because of its better response in the frequencies below about 100 vibrations per second. The average efficiency of such a speaker, arranged with suitable baffle board, is about 5 per cent, which is several times as good as that of the older cone-type speaker using the rocking armature motor.

RADIO TELEGRAPHY. In the field of radio telegraphy, the world-wide network of the Radio Corporation of America was expanded by new links, notably San Francisco to Shanghai (via Manila) and New York to Venezuela. Their channels in 1928 reached to Great Britain, Norway, Germany, Poland, France, Italy, Sweden, Argentina, Brazil, Dutch West Indies, Dutch Guiana, Porto Rico, Turkey, French Indo-China, and some other countries. The greatest activity in radio telegraphy was in the study and application of short waves, especially those shorter than 50 meters. The engineers of the Bell Telephone Laboratories were responsible for most of our increased knowledge of the action of these short waves, many excellent theoretical and experimental papers having come from these researchers. It was found, by oscillograph records, that these short waves actually do travel all the way around the world, many measurements yielding the time necessary for the circuit, on a great circle, as about .14 second. This corresponds closely to the velocity of light waves. On one occasion, a 15.6-meter wave was pictured after having gone around the world twice.

There was much activity in directional radio in the short-wave channels; Great Britain especially has been putting into service stations having a kind of parabolic system of antennas at both receiving and sending stations. This type of station is said to cut down the amount of required power to only a few per cent of that required with non-directional antennas.

It appeared that there was to be considerable application of short-wave, directive stations in the United States for "point to point" communication. Of the 600 short-wave channels available, the Radio Commission granted over 300 to three of the commercial communicating companies and the press, these all to be fixed stations, and about 150 licenses were granted for short-wave mobile stations (marine and aircraft). The total requests for short-wave channels sent in to the Commission numbered over 2200.

TELEVISION. In television, but little progress has been apparent during the year. The only development of note was the application by the Bell Laboratories' engineers, of some new photo-electric cells, larger and much more sensitive than those previously used. By their aid, outdoor scenes, having natural illumination, have been sent by the television apparatus used in their first experiments. Other engineers working on the television problem frequently announced to the newspapers great accomplishments, but the apparatus generally proved to be only an emasculated form of the apparatus used by the Bell Laboratories' research men. It seemed that the home television set, which would give pictures worth looking at, was still in the distant future.

RADITCH, rā'ditch, STEPHEN. Leader of the Croatian Peasant party, in Jugo-Slavia, died at Zagreb, August 8, as the result of a bullet wound inflicted by a representative of a Serbian radical district, during a session of the Jugo-Slavic Parliament, June 20. Raditch was born of a peasant family at Trebarjevo, Croatia, June 11, 1871 and attained an education in spite of severe poverty. As he understood his country's subjection to Austria-Hungary, he became vehement in his opposition to the Ban, or governor, appointed from Budapest, and, while still in his teens, he organized political student groups in the hope that he and his followers might some day achieve Croatian autonomy. Such youthful activity brought him into conflict with officials of school and government, and he already had been once expelled and twice arrested when he received his degree in classics from the college at Rakovac in 1891. He continued a tempestuous existence, traveling without funds throughout Jugo-Slavia and into Germany and Russia, observing the relations between people and governments. After teaching Russian and Croatian at Prague, he became involved in an insurgent movement which found expression on Oct. 16, 1895, when the students of Zabred University publicly burned a Hungarian flag. The following month Raditch was imprisoned as the leader of the insurgents. During his confinement he learned the Czech language, and, having been released in June, 1926, he set out for Russia with the intention of entering the law school at the University of Moscow. He found, however, that the course was too expensive, so, having been excluded from the universities of Zabred, Prague, and Budapest, and from all countries represented at the Vienna Parliament, he went to Paris to attend the École Politique, from which he was graduated in 1898. He returned to Prague the following year, and, besides working on the editorial staff of the *Independence*, he wrote many political articles.

In the election to the Hungarian Diet in the autumn of 1901, Raditch favored the opposition party, becoming secretary of the Union of

Croatian Opposition. Raditch was working for Croatian autonomy, and, placing his hope in the peasants, he published from 1903-04, the *Croatian Thought*, with the purpose of enlisting the intellectuals on the side of the majority class. On Dec. 22, 1904, Raditch presided at the meeting for the formation of a Croatian Peasant party. On May 28, 1910, a new franchise law was passed, which secured the vote of 16,000 peasants. During the World War, from 1914 until 1918, the Peasant party was pacifist, and Raditch even favored the Entente powers. When Bulgaria expressed herself ready to withdraw her troops from the Central powers, the Peasant party declared itself republican, in July, 1918. In the autumn of that year, the Austro-Hungarian Empire dissolved, and a revolutionary assembly of party leaders met at Zabred. Raditch, who had been elected to the new Government, failed to establish Croatian autonomy, and he opposed the committee which in November, 1918, surrendered to the Serbian Nationalists in order to secure the protection of the Serbian Army. A provincial government ruled until, in 1920, a committee was elected to draft a constitution for the United Kingdom. The Croatian Peasant party returned fifty members, but they refused to cooperate in the writing of the constitution.

Raditch believed that Jugo-Slavic unity was established, but that cultural differences between the Croats and Serbs and Slovenes made local independence essential, and, being in sympathy with the peasants, he advocated an immediate settlement of land disputes. Realizing that his purpose could not be accomplished without compromise, Raditch came to an agreement with the Belgrade authorities on Mar. 27, 1925, and the Peasant party officially recognized the Serbian dynasty, and the Jugo-Slavic constitution, in which its leaders had formerly refused to participate. The Croatian Peasant party and the Radical Serb party came to terms on July 14, providing that Serbian, Croatian, and Slovene citizens should have equal rights under the central Government, and that each commune should be autonomous. Six days later the Nettuno agreements were signed with Italy, but they roused such opposition in the Peasant party, and with the public, that the Belgrade authorities were unable to pass them through the legislature. Raditch became minister of education on November 18 of the same year, and although he was retired in the spring of 1926, he retained control of the cabinet through his followers until Feb. 1, 1927, when the Slovene clericals came into the majority. He was returned Sept. 11, 1927, and until his death he held nearly all legislation in abeyance by his opposition to Serbian measures, particularly the Nettuno agreements.

RADIUM. During 1928 but little radium ore was mined in the United States and no radium was reported isolated, the world market being supplied with radium from ores mined in the Belgian Congo. This product was the dominating feature of the radium situation. In Utah, a few tons of carnotite were mined and also in New Mexico small quantities of other ores were produced, all of which were utilized in therapeutic preparations. The Union Miniere du Haut-Katanga, controlling the Belgian Congo supply, reported that in the fiscal year ended June 30, 1928, it had sold 26 grams of radium produced from Belgian Congo ores. The retail price during

the year was stated at about \$70,000 per gram. The Soviet Government was also a producer reporting about 6 grams from various places, working the radium ores from Ferghana, a province of Russian Turkestan. In Czechoslovakia, ores mined at Jachymov, Joachimsthal, continued to be treated by the Government. During the year, attention was called to a number of deaths among workers in plants, in the United States, where radium ores and mesothorium were handled in making luminescent watch and clock dials and house numbers. The surgeon general of the Public Health Service toward the end of the year called a conference to consider the connection between radioactive substances and health, but no report had been prepared by the end of December. Radioactive salves, drinking-water, and pads continued to be manufactured. See also under **CHEMISTRY, INDUSTRIAL**.

INDUSTRIAL POISONING BY RADIUM. The daily press during 1928 contained many references to poisoning of workers in manufacturing plants which make use of radium and of damage suits resulting therefrom; but the scientific status of the problem was unsettled. In December, Surgeon General Cumming, of the Public Health Service, called a conference for the purpose of determining the best method of dealing with the problem. Seventy-five scientists and industrialists attended the conference which was held at Washington, D. C., Dec. 20, and the interest centered in the medical history of all of those in the country who have worked at luminous dial painting. In these subjects the individual resistance to radium poisoning differs within wide limits and it is possible that a certain standard of robustness will eliminate the danger of poisoning. Elimination of risk by a better technic, such as prohibition of wetting the paint brush with the lips, should greatly aid in the campaign, although Dr. E. Steward, Commissioner of Labor Statistics, favored complete abolition of radium in all industry. Dr. Drinker, of Harvard, who had inspected certain radium plants where poisoning had occurred, found that some of the victims had not used paint brushes at all; among the fatalities were cases in chemists and a superintendent. Injurious effects could supervene long after the period of actual exposure. See **CHEMISTRY, INDUSTRIAL**.

RAI, LALA LAJPAT. Indian Nationalist leader, died at Lahore, India, November 17. He was active in nationalistic propaganda to undermine the British domination while the Earl of Minto was viceroy, and, in 1907, he was deported for increasing the widespread unrest. Living in America, he wrote extensively on the political problems of India. After the World War he returned to India, and became an influential follower of Gandhi. As leader of the Nationalist party in the Indian legislative assembly, he continued to work against British intervention, coming into frequent conflict with the authorities. He was arrested in 1921, on the charge of conducting a seditious political meeting. In the month before his death, he led a demonstration against the Simon commission, which was to investigate statutory reform.

RAILWAY ACCIDENTS. During 1927, the number of persons killed in railway accidents in the United States was 6821, as compared with 7090 in 1926, while the number injured was 104,799, as compared with 130,235 in 1926, according to the report contained in *Accident Bulletin*

No. 96, issued by the Interstate Commerce Commission, in 1928. Of the total number killed in train accidents, 286, and of those injured, 3,072, there were 194 railroad employees killed while on duty and 1211 injured. The total number of accidents, from collision, derailment, or other causes, was 18,976, and these resulted in damage to property totaling \$20,765,698. It was reported that of the 236,283 highway crossings on the railroads of the United States, Dec. 31, 1927, 207,559 were unprotected.

RAILWAY ACCIDENTS BY GROUPS

Group of accidents	Year ended Dec. 31, 1927		Injured
	Number of accidents	Number of casualties	
Train accidents	18,975	286	3,072
Train-service accidents	42,327	6,096	39,531
Non-train accidents	(a)	439	62,196
Total	(a)	6,821	104,799
Group of accidents	Year ended Dec. 31, 1928		Injured
	Number of accidents	Number of casualties	
Train accidents	21,077	360	3,916
Train-service accidents	48,504	6,329	45,733
Non-train accidents	(a)	401	80,586
Total	(a)	7,090	130,235

According to the director of the Bureau of Railway Economics, there was approximately a 10 per cent decrease of deaths over 1927 in the first eight months of 1928, and approximately a 20 per cent decrease of injuries.

One of the most serious accidents in the United States was that on the Interborough Rapid Transit subway, when seventeen persons were killed on August 24 as two cars were derailed during rush hour by a faulty switch.

In Great Britain, there were more lives lost in railway accidents in 1928 than in any year since 1915. Fourteen persons were killed on October 13 at Charfield, Gloucestershire. Twenty-five passengers were killed at Darlington on June 27 when the engineer of a freight train mistook signals at a switch, and ran head-on into an excursion train, causing a passenger coach to be telescoped. The accident aroused discussion in the Ministry of Transport as to the advisability of all-steel coaches, the efficiency of automatic train control, and the means of preventing telescoping.

The most disastrous accident of the year occurred on October 26, when the Simplon-Orient express collided with a Bucharest train, killing thirty-four persons, including every passenger in two sleeping coaches which were telescoped. Sixteen persons were killed when a trainman mistook signals on the Northern Railway of France, outside the Paris terminal, on April 11. A Budapest express, receiving false signals, was wrecked in Czechoslovakia, and twenty persons killed, on September 10.

RAILWAYS. Argument was begun before the Supreme Court of the United States on Jan. 3, 1929, in the so-called St. Louis & O'Fallon case. This case indirectly affected the earning power of railroad property estimated to be worth \$18,900,000,000 or more. It involved the method adopted by the Interstate Commerce Commission in valuing railroad property. Under the Transportation Act of 1920 the Interstate Commerce Commission was empowered to make a valuation of property of railways employed in rendering transportation service and was required to fix such rates

for passengers and freight as would yield the railway companies a fair return on the capital found to be invested in the physical property, after the payment of expenses and taxes. Under the Transportation Act the Government was empowered to recapture one-half of all railroad earnings in excess of 6 per cent.

The Interstate Commerce Commission used the prices of 1914 as a basis for valuation of the railroad properties. The railway companies claimed that this was not a fair present value. The whole question was immensely complicated because the present value of railroad property was determined by the rates which railroads were allowed by the Interstate Commerce Commission to charge for transportation. It would seem simple to determine with a fair degree of accuracy the actual investment which had been made in railways and to allow such rates as would yield a fair return after the payment of expenses on this valuation; but in practice it was found quite impossible to arrive at the actual historical cost of the railways and, therefore, the commission made an attempt to determine what it would cost to build the railways of the country to-day, but in arriving at this cost the commission used the prices of 1914 for both labor and materials. Since these prices were considerably below the prices that labor and materials command today the valuation as arrived at by the commission was, according to the railway companies' lawyers, too low.

There was another question involved in the St. Louis & O'Fallon case which the court was called upon to decide. There were two railway lines involved in the case, one the St. Louis & O'Fallon Railway Company and the other the Manufacturers' Railway Company. The railway companies contended that the Transportation Act of 1920 contemplated the consolidation of various railway companies' properties and that a fair return could legally be earned on the aggregate value of the properties. The commission contended that a fair return and only a fair return should be allowed to each separate company and that the averaging of the two values was not in accordance with the Transportation Act.

The railways were not only faced with the problem of convincing the Supreme Court of the United States, and this really meant the public opinion of the United States, that they were entitled to charge rates for the carriage of passengers and freight which would yield a fair return on what they contended was the true value of the property used for transportation services, but they also, in 1928 as never before, had to meet competition in service from airplanes and from motor trucks using public highways. Even given a right of way constructed by the State or the Federal Government, motor trucks cannot render freight or passenger service at as low a cost as steam railways for distances over 100 miles; but they can render service which for the moment at least was more satisfactory to the public than the service rendered by railways. The consequence was that the steam railways were losing both freight and passenger business in competition with motor trucks. Nevertheless, through economies of operation, the railroad managements were able to make a better showing in 1928 than they had in 1927. In the first ten months of 1928, total operating expenses were \$133,000,000 less than in the corresponding period of 1927; \$174,000,000 less than in the first ten months of 1926

and \$408,000,000 less than in 1923. Transportation expenses, which are the out-of-pocket cost of moving freight and passenger business, were \$65,600,000 less than in 1927 and \$226,000,000 less than in 1923. Motor transport competition also figured in Great Britain. See GREAT BRITAIN.

The total net operating income of the Class 1 (companies earning a million dollars a year or more each) roads in the first ten months of the year 1928 was \$986,000,000, or at the annual rate of 4.73 per cent on their property investment.

In a review of railway operations in 1928 written by Julius H. Parmelee, Director of the Bureau of Railway Economics for the Annual Statistical Number of the *Railway Age*, Mr. Parmelee says:

Freight traffic for the year was almost exactly the same as in 1927. The traffic for the first six months was about 4 per cent below that of the corresponding period of 1927, while the traffic of the second six months was about 4 per cent above 1927. Passenger traffic declined in every month of 1928, the decrease for the year being about 6 per cent. The freight traffic's story falls into two distinct periods of six months each from January to June, both car loadings and ton-miles ran consistently below the corresponding months of 1927 while from July to the end of the year they ran as consistently ahead. As the result the totals for the year are almost the same as in 1927.

The total passenger miles (a passenger mile is one passenger carried one mile, or two passengers carried a half-mile each, etc.) in 1928 amounted to 31,500,000,000 and in 1927 to 33,655,000,000. This again is for Class 1 railroads and is based by Mr. Parmelee upon reports of the Interstate Commerce Commission and include revenue movement only.

One of the means which the steam railways adopted to meet competition by other methods of transportation was the development especially important in 1928 of joint air-rail routes. The first air-rail route to be put into actual operation was the service between Chicago and the Twin Cities (St. Paul and Minneapolis). The Northwest Airways Company operating this service had an agreement with the Great Northern Railroad, the Northern Pacific Railway and the Chicago, Milwaukee, St. Paul & Pacific Railway whereby passengers may use the airplane service between Chicago and the Twin Cities as part of their journey from the East to the Northwest or from the Northwest to the East. The Pennsylvania Railroad, the National Air Transport Company, and the Atchison, Topeka & Santa Fe made arrangements for passengers taking the trip from New York to Los Angeles to travel by rail (on the Pennsylvania) from New York to Columbus, Ohio, thence by airplane to Dodge City, Kansas, and thence by rail again to a point in New Mexico where they again would take airplane to Los Angeles.

The New York Central provided passenger service permitting the traveler to go by rail from New York to Cleveland and by airplane from there to Chicago. The Pan American Airways operating between Miami, Florida, and Havana, Cuba, made traffic arrangements with the Chicago-Florida lines and the New York-Florida lines in conjunction with the Florida East Coast Railway whereby passengers from New York or Chicago or intermediate points might use the airplane service between Miami and Havana. The Illinois Central had traffic arrangements with the Chicago-St. Louis air lines whereby round-trip tickets between these points were sold which were good by rail one way and by air the other.

To meet competition in freight service, the railways improved their freight service very much. They reduced their schedules of freight trains and improved on the time performance of these schedules. Among typical examples was ninth-morning delivery of freight originating at Chicago destined for Los Angeles and San Francisco, a reduction of the schedule by twenty-four hours. The time from Chicago to Denver was reduced to 10½ hours. From St. Louis to Denver the time had been reduced from 77½ hours to 67 hours. From Kansas City to Denver the time was reduced on freight from 55½ hours to 44½ hours. The through freight from Chicago to Omaha is run on a 24-hour-and-10-minute schedule saving 24 hours in delivery at Omaha on freight originating east of Chicago and received before 5 A. M. at Chicago, a saving of 24 hours to Seattle, Tacoma, Portland, and other northwestern points, making it possible for eighth-morning delivery instead of ninth-morning delivery. The Great Northern and the Chicago, Burlington & Quincy provided freight service which gives ninth-morning delivery from Seattle, Tacoma, and Portland to Fort Worth, Texas, saving 24 hours. The lines running between St. Louis and the Twin Cities now make second-morning delivery of freight as compared with third-morning delivery heretofore.

The Chicago & Eastern Illinois and the St. Louis-San Francisco provided a new schedule of second-morning delivery of freight from Chicago to Springfield, Joplin, Mo., and Tulsa, Oklahoma, instead of third-morning delivery. The Chicago & Eastern Illinois reduced the running time of its manifest trains from Chicago to southeastern connections at Evansville, Indiana, Chaffee, Missouri, and Thebes, Ill., from two to four hours each. The Illinois Central reduced the schedule of its Chicago, Birmingham, Alabama, and Chicago, Martin, Tennessee, trains so as to provide a saving of 24 hours to Florida and other southeastern destinations.

The possibilities for more commodious and luxurious passenger accommodations on trains than on automobiles was widely advertised. Attractive rates were being offered to counteract to some extent the rates offered by motor-coach lines. As one of the principal sources of the loss of traffic was in day-coach travel, every effort was made to render this service more attractive.

Surprising as it may seem, more mileage of steam railroads was built in 1928 than in 1927. The *Railway Age* compilation of miles of new line completed in the United States since 1893 shows that 1025 miles (road-miles) were completed in 1928 as compared with 779 miles completed in 1927. In part offsetting this new mileage built, the mileage of lines abandoned in the United States in 1928 was 512 as compared with 282 abandoned in 1927. The lines abandoned in 1928 include 80 miles in Nevada, 40 miles in California, 40 miles of branch lines in Tennessee, and 68 miles of branch line in Ohio.

CARS ORDERED IN 1928. The *Railway Age* made a compilation of the orders given for railroad equipment during the year and estimated that orders were placed for 51,200 freight cars for service in the United States during 1928 as compared with orders for 72,006 freight cars for service in the United States in 1927. The number of passenger cars ordered for service in the United States in 1928 was 1930 comparing with 1612 ordered in 1927. The number of locomotives or-

dered for service in the United States was 603; for service in Canada, 98; and for export to other countries, 27. This compared with 734 ordered for service in the United States in 1927; 58 for service in Canada in 1927; and 54 for export. The number of cars and locomotives ordered and the number built should not be confused. The number of freight cars built in the shops in the United States was 46,998 in 1928 comparing with 64,477 built in 1927. Of those built in 1928, 938 were for foreign use and 46,060 were for domestic use. Of those built in 1927, 1087 were for foreign use and 63,390 for domestic use.

CONSOLIDATIONS. On Apr. 13, 1928, majority and minority reports on the revised Parker Bill for the consolidation of railroads were presented in the House of Representatives by the House Interstate Commerce Committee. Senator Fess, of Ohio, on Dec. 19, 1928, introduced in the Senate a revised railroad consolidation bill to take the place of the bill he had introduced at the previous session. The new bill was made up of the text of the Parker Bill with several amendments proposed by the representatives of the Association of Railway Executives. One amendment would remove the prohibition against the acquisition by one carrier of securities of another in an amount not sufficient to constitute control, but with the provision that such shares shall not be voted on any question relating to unification without the approval of the Interstate Commerce Commission. Another amendment provided that the holders of voting securities shall be held to have consented to a unification plan if a majority of the votes of stockholders are cast in favor of the plan. Unless in the case of bondholders having a vote, the trustee shall file a certificate showing that the holders of a majority of the bonds dissent.

In the majority report on the Parker Bill it was said that "the time has come when the temporary provisions of the present law must be repealed and termination provisions substituted therefore which are adequate to protect and promote the interests of the public, which are reasonably certain and possible of administration and under which the established policy can be carried out." The primary purpose of the bill was to limit the defects of the existing law in order that the established policy of permitting the voluntary unification of the railroads and their properties may be carried out, but only if in each case the Interstate Commerce Commission has determined that the proposed unification will promote the public interest. The bill provided that only unifications which will effectively promote the public interest may be authorized and it affords the carriers more flexible methods for carrying into effect a proposed unification which has been approved by the Commission. The proposed unification may be carried out through corporation merger, a corporate consolidation under State law, an acquisition of control through stock ownership or an acquisition of properties by purchase, lease or otherwise. The requirement that the Interstate Commerce Commission first establish a plan for consolidation is repealed. Protection is given dissenting stockholders by compelling the payment in cash to those who do not desire to remain stockholders. Stock may be acquired by condemnation.

The Bill, Section 214, provides:

That no tax shall be levied or collected under any revenue law of the United States or by or under the authority of any state or any political sub-division

thereof in respect to any issue, sale, delivery or transfer of any security, or any agreement to sell or memorandum sale of any security if in pursuance of an order of the Commission under this title approving a plan. Gain from the sale or other disposition of the property or economy from any distribution in connection with such unification shall not be subject to tax by or under the authority of any state or any political sub-division thereof except to the extent that money is received from time to time from such sale, disposition, or distribution. Any such unification shall be held to be a reorganization within the meaning of that term as used in Part 1 of Title 2 of the Revenue Act of 1926.

Regulation of interstate passenger motor-bus traffic which the original Parker Bill placed in the hands of joint commissions comprising representatives of the highway courts of the various States through which the lines traveled is vested in the Interstate Commerce Commission by the amended measure. The original bill merely designated the Interstate Commerce Commission as a court of appeal from the decisions of the proposed joint regulatory courts.

During 1928, no important proposals for consolidation of railroads were brought before the Interstate Commerce Commission.

RECEIVERSHIPS AND FORECLOSURE SALES. The compilation of railroad mileage in the hands of receivers and of receiverships, made by the *Railway Age*, gave 5352 miles as the number of road-miles operated by receivers in 1928. Only one road, the White River, a 19-mile line in Vermont, was placed in receivership during 1928. In all, thirty-four different companies owned the 5352 miles of railroad which were in receivership during 1928.

The Chicago, Milwaukee & St. Paul was reorganized during 1928 as the Chicago, Milwaukee, St. Paul & Pacific. As might have been expected, the earnings of the company showed improvement as soon as the purposes of the receivership had been accomplished. Total operating revenues Jan. 1 to Oct. 31, 1928, were \$138,451,658 as against total operating revenues, for the corresponding period of 1927, of \$136,555,779. Operating expenses, however, for Jan. 1 to Oct. 31, 1928, were \$101,142,806 and for the corresponding period in 1927, \$111,562,785. Net, after deducting expenses, rentals, and taxes, amounted to \$24,497,627 Jan. 1, 1928 to Oct. 31, 1928, and for the corresponding period in 1927 to \$12,063,224. The road mileage traveled was 11,251 in 1928 and 11,204 in 1927. Thus, with a somewhat larger mileage traveled, there was a slightly larger gross in 1928 than in 1927 and very much smaller expenses.

DIVIDEND CHANGES. The New York, New Haven & Hartford declared the first dividend on the common stock since 1913 and paid a special dividend of \$1 per share to stockholders of record at the close of business on March 9. In August, the directors again declared a special dividend of \$1 per share to stockholders of record September 10, and in November a special dividend of \$1 was declared to stockholders of record December 7, making a total disbursement for the year of \$3 per share. In April, the directors of the Atchison, Topeka & Santa Fe raised the regular quarterly rate of dividends on the common stock from 1¾ per cent to 2½ per cent, thus officially recognizing the fact that the Atchison, Topeka & Santa Fe common stock was on a 10 per cent annual dividend basis. An extra dividend on the common stock of the Chicago & North Western of one-half of 1 per cent was declared in addition to the regular 2 per cent semi-annual

dividends at the November, 1928, meeting of the Board of Directors. The Chicago, Rock Island & Pacific directors placed the common stock on a 6 per cent annual basis by raising the quarterly dividend from $1\frac{1}{4}$ per cent to $1\frac{1}{2}$ per cent. An initial quarterly dividend of $1\frac{1}{4}$ per cent on the 5 per cent preferred stock of the Missouri Pacific Company was declared payable to holders of record Dec. 15, 1928. At the same time an extra dividend of $1\frac{1}{2}$ per cent was declared to apply on the back dividends of this stock which had been cumulative since 1918. The Texas & Pacific declared an initial dividend of $1\frac{1}{4}$ per cent quarterly to holders of record May 31, placing the stock on a 5 per cent annual basis. Directors of the Norfolk Southern declared a semi-annual dividend of $\frac{1}{4}$ per cent to stockholders of record December 20 and an extra dividend of 1 per cent was declared at the same time. The directors of the Rutland Railroad declared a dividend of 1 per cent on the outstanding 7 per cent cumulative preferred stock to stockholders of record November 30. This was the first payment on this cumulative preferred stock since the payment of 1 per cent which was made in January, 1927.

The directors of the Wheeling & Lake Erie declared a dividend of 7 per cent on the prior lien stock of the company, to stockholders of record October 25. This was the first payment on this stock which was issued in the reorganization of the company in 1916. The stock was cumulative and its holders were entitled to elect a majority of the directors while dividend payments remain five years or more in arrears. The directors of the Alabama Great Southern, which company was affiliated with the Southern Railway, declared an extra dividend of 3 per cent on both the common and preferred stock in addition to the regular 4 per cent semi-annual dividends on both issues. The two extra dividends of 3 per cent in 1928 compare with two each of $3\frac{1}{2}$ per cent in 1927. The directors of the Kansas City, Oklahoma & Gulf declared an initial dividend of \$3 per share to stockholders of record July 23, 1928, on the company's Series A, 6 per cent preferred stock.

The directors of the Long Island Railroad declared a dividend of 4 per cent on the stock, nearly all of which was held by the Pennsylvania. This was the first dividend on the stock of the Long Island since 1896. The directors of the Mobile & Ohio declared an extra dividend of 5 per cent in addition to the regular semi-annual dividends of $3\frac{1}{2}$ per cent. This compares with an extra dividend of 3 per cent declared in December, 1927. The directors of the West Jersey & Seashore declared a dividend of $2\frac{1}{2}$ per cent to stockholders of record March 15 and in September a second semi-annual dividend of $2\frac{1}{2}$ per cent was declared.

SIGNALS. According to the *Railway Age* compilation, automatic block signals were completed on 3121 miles of road during 1928 which mileage exceeds the annual average for the past 10 years by 752 miles, but compares with 5127 miles of road equipped with automatic block signals in 1927. There were 126 new interlocking plants completed in 1928 compared with 142 completed in 1927. On the 3121 miles of road equipped with automatic block signals in 1928, 5536 signal units were installed. The Interstate Commerce Commission issued a report on Nov. 26, 1928, saying in effect that a far greater measure of safety was

to be expected from vigorous efforts to provide adequate protection against the large number of accidents that arise from causes other than the disregard of fixed signals than from requiring by order special efforts to extend automatic train-control installations. The Commission did not order any further installations of train-stop or other train-control devices. The Pennsylvania Railroad, at the end of 1928, had under construction the installation of locomotive cab signals without automatic control of the brakes of 225 locomotives operating on 81 road-miles, comprising 327 track-miles. The wayside automatic signals on this line are to be continued.

RAILROAD SECURITIES. The total sales of railroad securities in the first eleven months of 1928 was \$746,724,000 (par value) as compared with more than \$900,000,000 in the full year 1927. This tabulation was made by the *Wall Street Journal*. Of the total par value of railroad securities sold, 25 per cent was stock, 64 per cent, bonds, and 11 per cent, equipment trust certificates. This compares with 21 per cent of the total in 1927 in stock, 70 per cent, bonds, and 9 per cent, equipment trust certificates. The Interstate Commerce Commission had favored competitive bidding for railroad securities and, in its annual report for 1927 made public in 1928, pointed to a steady decrease in the spread between the cost of funds to the railroads and the interest yield to the public. In 1928, however, a railroad invited bids from sixty bankers on an equipment trust issue (the commission had expressed the opinion that equipment trust issues were particularly well adapted for competitive bidding) and only three bids resulted, all of which were rejected. The highest of these bids was 97.25 per cent. The road, after rejecting the bids, sold the issue to its regular banker for 98.25 per cent. The Pennsylvania Railroad sold \$17,500,000 stock to officers and employees and \$62,408,250 par value stock to stockholders. The St. Louis-San Francisco offered \$49,157,400, 6 per cent preferred stock to its common stockholders. The New York Central sold \$42,158,300 capital stock (it has no preferred stock) to stockholders and the proceeds were used to retire bonds. The Atchison, Topeka & Santa Fe offered to stockholders the right to subscribe to \$30,204,000 par value convertible debentures and was authorized by the Interstate Commerce Commission to issue \$18,122,400 common stock to be exchanged for bonds which may be offered for conversion.

The Interstate Commerce Commission disapproved of the issue to stockholders at par of stock by the Chesapeake & Ohio. The commission expressed the desire that the Chesapeake & Ohio stock, which was paying 10 per cent and was quoted on the New York Stock Exchange Jan. 6, 1929, as closing at 219 $\frac{1}{4}$, be offered to stockholders at 150. The railroad company re-submitted its case.

The St. Louis-San Francisco sold through Speyer & Company, J. & W. Seligman & Company, and the Guaranty Trust Company \$100,000,000, par value, of $4\frac{1}{2}$ per cent Series A Consolidated Mortgage bonds due 1978 to the public at a price of 97. The Pennsylvania Company sold through Kuhn, Loeb & Company, \$50,000,000 of $4\frac{1}{4}$ per cent Secured Mortgage bonds due 1963, at a price to the public of 99. The Southern Pacific sold \$29,400,000 of $4\frac{1}{2}$ per cent bonds due 1968 at 99 $\frac{3}{4}$ to the public, yielding to maturity 4.52 per cent. This compares with the Penn-

sylvania Company bonds yielding 4.81 per cent to maturity. The Union Pacific sold, through Kuhn, Loeb & Company, \$20,000,000 of 4 per cent bonds due 1968 at a price to the public of 92¾, yielding 4.38 per cent, and the Alabama Great Southern sold \$5,206,000 per value of First Mortgage Series B bonds due 1943 through J. P. Morgan & Company, the First National Bank, and the National City Company, to the public at a price of 98½ yielding 4.15 per cent. The Wabash sold \$17,867,000, par value of 4½ per cent Refunding and General Mortgage Series C bonds, due 1978, at 93 to Kuhn, Loeb & Company, who offered them to the public at 95½. The yield to the bankers was 4.875 per cent and to the public 4.74 per cent.

See ELECTRIC RAILWAYS; FINANCIAL REVIEW; RAILWAY ACCIDENTS; RAPID TRANSIT TUNNELS. **RAILWAYS, ELECTRIC.** See ELECTRIC RAILWAYS.

RAPID TRANSIT. NEW YORK CITY. The work of the Board of Transportation of New York City in the construction of the several works which it had under way, described in the 1927 YEAR BOOK, progressed satisfactorily during the year. The principal portion of the new construction was the line extending from the upper end of Manhattan Island, along Broadway, Fort Washington Avenue, St. Nicholas Avenue, Eighth Avenue, Central Park West, lower Eighth Avenue, Greenwich Avenue, Sixth Avenue, Church and Fulton Streets, Manhattan, thence under the East River to Cranberry, High, and Jay Streets, Brooklyn. This line involved several novel features of design, a double-deck section in certain sections as well as difficult crossings of older construction, but it was carried forward rapidly and without serious difficulty. A considerable portion was complete with street surfaces restored at the end of the year. The details of the construction methods employed, with little interruption of street traffic as compared with the great open cuts of the original New York subway, are an interesting example of modern methods and problems of excavation. The design, on the other hand, shows how wisely the original subway project was worked out, for the new work follows exactly the same steel-beam-and-jack arch type of construction.

The cross-connection between this north and south route at Fifty-third Street also made good progress. Beginning at Eighth Avenue, where transfer will be made, the line runs eastward under the East River and Welfare (formerly Blackwell's) Island to Long Island City. One of its most important features is the tunnel under the East River. Two tubes are used, each 18¼-ft. diameter, at 30-ft. centres, and they were safely and rapidly constructed. At the close of the year they were practically excavated and awaiting only the official ceremony of "holing through." As these tubes passed through rock in large part, they were built both in part under normal atmospheric pressure and in part using compressed air. A central shaft on Welfare Island as well as construction shafts both at the Manhattan and the Queens approaches were used. The rapidity of this work is indicated by the fact that the contract was let in March, 1927.

The Fourteenth Street-Eastern subway in Brooklyn, representing 7¾ miles of route built at a cost of \$33,000,000, having been sufficiently advanced from its previous terminus, at Montrose and Bushwick Avenues, to the Broadway elevated

connection at Conway Street, was opened for service to East New York. Coincident with this opening, bids were called for to extend this line from its present Manhattan terminal in Fourteenth Street and Sixth Avenue, to Eighth Avenue where transfer can be made to the new Eighth Avenue line under construction.

The so-called Nassau Street loop, after years of discussion and some difficulty over letting the contract, was under construction. It was an extremely difficult piece of work and connects the Brooklyn-Manhattan Transit station under the Municipal Building in New York by a line extending down Nassau Street to Whitehall Street, to the present line and Montague Street Tunnel of the B. M. T. This would permit the Broadway (Brooklyn) line to be operated as a loop with the lower B. M. T. line and thus, it was hoped, speed up traffic. The work was being done in two sections, the first having been let early in 1928 and the second at the end of the year.

PHILADELPHIA SUBWAY. The first train passed through the new \$87,000,000 North Broad Street Subway on September 1. Twenty-three minutes after leaving the City Hall Station it arrived at the Olney Avenue terminal, six miles north. The work was begun four years previously and involved a four-track subway. It was expected that only the two local tracks would be used pending the completion of the South Broad Street section, from City Hall to South Street, under construction during the year. A three months' operating contract was made with the Philadelphia Rapid Transit Company for a rental of \$200,000 a month with a fare of 7½ cents. It was understood that the data secured on operating costs during this period would be used in making a longer contract. Indications are that there is to be considerable difficulty in reaching a decision on a final contract.

LONDON TUBE RECONSTRUCTION. The large number of passengers, some 25 million annually, using the important Piccadilly Circus station in the London "tubes" or underground railway, had made it clear that the time had arrived for a redesign of this station. It was one of the first of its kind in London and involved many features which were far from convenient judged by modern standards. The London Electric Railway Company therefore decided upon a thorough reconstruction of the accesses (passageways) and circulating areas (platforms, etc.) with the substitution of escalators for lifts (elevators) and with special attention to securing passageways which make it possible to avoid the dangers of the heavy street traffic for passengers by providing exits at various street points. The work was begun in 1925 and was to be opened early in 1929 at a cost of \$2,500,000. A large new "booking hall," elliptical in form and occupying some 15,000 square feet in the centre of the area, was covered by a spider-web arrangement of steel beams and was one of the main construction features of the design.

At Waterloo Station, due both to present traffic requirements and because of expected increases on account of the completion of the Kensington extension of the Hampstead line, a new triple escalator was built, by the Southern Railway Company. This work involved excavation deep in the London clay through which the London tubes are built.

TOKYO SUBWAY. The first city of the Orient to adopt the subway as a means of rapid transit

opened its first work late in December, 1927. Only $1\frac{1}{2}$ miles long and equipped with ten all-steel cars, this line, built like the New York subway, doubtless marks the beginning of such construction in the East. It connects two sections of Tokyo, Ueno and Asakusa, for which surface facilities had proved inadequate, and is privately owned.

RATHBONE, HENRY RIGGS. American lawyer and representative in Congress, died at Chicago, Ill., July 15. He was born at Washington, D. C., Feb. 12, 1870. His father, Maj. Henry R. Rathbone, was a special aide to President Lincoln on the night of Apr. 14, 1865, and was with the President when he was assassinated; Major Rathbone's fiancée, whom he subsequently married and who became the mother of Henry R. Rathbone, also was in the President's box in Ford's Theatre, Washington. Mr. Rathbone, who was a successful trial lawyer and a member-at-large of Congress from Illinois from 1923 until his death, was a noted collector and student of Lincolniana. He was graduated from Yale, 1892, and studied law at the Albany (N. Y.) Law School and the University of Wisconsin. From 1893 on he lived and practiced at Chicago. He was especially active in the national House of Representatives as sponsor of the proposed amendment to the United States Constitution to prohibit child labor.

RAYMOND, RÄMUND, E. T. See THOMPSON, EDWARD RAYMOND.

RAYMOND, ROBERT MATTHEW. American mining engineer and educator, died at Prescott, Ariz., August 23. He was born at Norton, New Brunswick, Canada, 1856, and having been graduated from the University of New Brunswick in 1877, he came to the United States and studied at the Columbia School of Mines receiving the degree of E.M., in 1889. He was superintendent of the Diamond R. Mining Company, of Montana, 1891-94, and then general manager of the Harquahala Gold Mining Company, of Arizona, until 1896. Receiving a similar position in the El Oro Mining and Railway Company, of El Oro, Mexico, in 1902, he supervised the organization of the first cyanide process plant in Mexico, which was so successful that it was considered a model. Professor Raymond became managing director of the El Oro Company and of the Exploration Company of England and America in 1908, continuing that work until 1916, when he returned to the United States and was appointed professor of mining at Columbia University.

RAYON. In 1928 the world's production of rayon was estimated at about 347,940,000 pounds distributed as shown in the accompanying table taken from the annual review number

of the *Textile World* (New York). It will be seen that in 1928 as in previous years the United States led in the world's production, but also it was quite apparent that rayon manufacture was quite generally distributed throughout the world. In fact, in addition to its own production, the United States imported during 1928 rayon valued at \$15,500,158, in which figured yarns, threads, and filaments to the amount of 12,742,418 pounds, valued at \$10,905,531.

The statistics on production for the rayon industry for the United States are given in the accompanying table, also from the *Textile World*, which shows comparative figures with earlier years as well as the production for 1928 and estimates for 1929. These statistics indicate that the industry was in the hands of large and efficient corporations and the increase in production and capacity since its establishment had been rapid and marked. On the technical side, the leading features of the rayon industry of 1928 were the development of yarns of subdued lustre, and the increased production of multifilament rayon. The leading consumers in 1928 were the manufacturers of underwear who were taking practically a third of the country's production. Next came the manufacturers of cotton goods who used rayon in combination with cotton yarns, accounting for some 20 per cent; the manufacturers of hosiery took a slightly less amount, with manufacturers of silk goods in fourth place, other industries absorbing the remainder of the production. The various consumers were calling for improved and finer yarns; and technical advances due to the research chemist and engineer continued. As discussed under **TEXTILE MANUFACTURING**, there were several new plants in course of erection during the year.

WORLD PRODUCTION OF RAYON BY COUNTRIES [From *Textile World*]

Country	1926 Lbs.	1927 Lbs.	1928 Lbs.
United States ..	62,575,000	75,050,000	97,700,000
Great Britain ..	25,500,000	38,803,000	52,000,000
Italy	35,000,000	36,000,000	45,000,000
Germany	26,000,000	31,000,000	43,000,000
France	15,500,000	21,000,000	30,000,000
Holland	13,500,000	16,500,000	18,000,000
Belgium	13,100,000	13,500,000	15,000,000
Switzerland ...	8,000,000	10,340,000	12,000,000
Japan	5,500,000	8,000,000	14,000,000
Poland	2,000,000	4,000,000	6,500,000
Austria	3,500,000	3,500,000	4,000,000
Czechoslovakia .	2,800,000	3,500,000	3,000,000
Spain	300,000	1,000,000	1,500,000
Hungary	(c)	(c)	660,000
Canada	2,250,000	2,600,000	3,750,000
Brazil	(c)	(c)	800,000
Sweden	(c)	(c)	380,000
All others	1,555,000	2,075,000	700,000
Total	219,080,000	266,868,000	347,940,000

^a Included in "all others."

UNITED STATES RAYON PRODUCTION [Estimate by *Textile World*]

	1924 Lbs.	1925 Lbs.	1926 Lbs.	1927 Lbs.	1928 Lbs.	1929 Lbs.
The Viscose Co.	28,000,000	35,000,000	37,000,000	41,000,000	54,000,000	66,000,000
Du Pont Rayon Co.	4,000,000	6,761,560	10,900,000	15,100,000	18,231,000	22,800,000
Tubize Artificial Silk Co. ..	4,250,000	5,200,000	7,000,000	7,500,000	8,500,000	10,500,000
Celanese Corp.		1,500,000	2,500,000	3,500,000	5,000,000	6,000,000
Industrial Rayon Corp.	2,000,000	2,250,000	3,400,000	3,450,000	4,250,000	6,500,000
American Bemberg					2,100,000	3,000,000
American Glanzstoff					350,000	4,000,000
Skenandoo Rayon Corp.					1,150,000	1,250,000
Belamont Corp.		675,000	875,000	1,400,000	1,380,000	1,700,000
Delaware Rayon Co.				500,000	1,500,000	2,000,000
Acme Rayon Corp.		322,665	400,000	500,000	740,250	1,000,000
Other firms	600,000	500,000	500,000	2,100,000	500,000	1,000,000
Total	38,850,000	52,209,225	62,575,000	75,050,000	97,701,250	125,750,000

At the biennial census of manufactures taken in 1928 by the U. S. Department of Commerce, the establishments engaged primarily in the production of rayon and allied products in 1927 reported, for that year, a total output valued at \$109,888,336, an increase of 24.8 per cent as compared with \$88,060,962 for 1925, the last preceding census year. The production in 1927 was made up as follows: Yarns, 75,555,439 pounds, valued at \$106,468,752; allied products (sheets, etc.), 2,053,204 pounds, valued at \$3,076,835; and waste, 2,985,390 pounds, valued at \$342,749. This industry classification embraced establishments engaged primarily in the production of rayon yarns and of allied products in the form of sheets, etc., but does not cover establishments manufacturing rayon yarns into finished products, such as textiles. Of the 19 establishments reporting for 1927, three each were located in New Jersey and New York, two each in Ohio, Pennsylvania, Tennessee, and Virginia, and one each in Connecticut, Delaware, Maryland, New Hampshire, and West Virginia.

The statistics for 1927 and 1925 are summarized in the accompanying statement. The figures for 1927 are preliminary and subject to such correction as may be found necessary after further examination of the returns.

The scope of the measure was one of the most stupendous ever passed. It provides for the construction at the Black Canyon site on the Colorado River of a dam nearly twice as high as any in existence. This would impound approximately 26,000,000 acre-feet of water, providing for the irrigation of wide expanses of land in seven States of the Colorado River Basin, and the development of approximately 1,000,000 horse power of electrical energy. In addition, the act provides for flood-control works to protect the Imperial Valley in southern California, and also for the construction of an all-American canal across southern California from the Colorado River to bring irrigating waters to the Imperial Valley. The valley was being irrigated by a canal branching off the Colorado River which runs through Mexican territory.

The measure provides for a Federal appropriation of \$165,000,000, estimated as necessary to construct the dam and accompanying works. The cost is to be repaid under an amortization plan from proceeds of the sale of power. On the basis of estimates, it was expected that the entire cost would be returned to the Government with interest within 50 years.

Before the measure can become effective, at least six States in the basin area must ratify the Colorado River compact; California, Colorado,

RAYON MANUFACTURE IN THE UNITED STATES

	1927	1925	Per cent of Increase (%)
Number of establishments	19	14	
Wage earners (average number) ^b	26,341	19,128	37.7
Wages ^c	\$28,649,441	\$22,975,605	24.7
Cost of materials, factory supplies, containers for products, fuel, and purchased power ^c	\$25,747,792	\$18,477,965	39.3
Materials, supplies, and containers	\$22,743,855	(^d)	...
Fuel and power	\$3,003,937	(^d)	...
Products:			
Total value ^c	\$109,888,336	\$88,060,962	24.8
Rayon:			
Yarns—			
Pounds	75,555,439		
Value	\$106,468,752		
Waste—			
Pounds	2,985,390	51,902,491	55.3
Value	\$342,749	\$88,007,873	24.9
Allied products (sheets, etc.)—			
Pounds	2,053,204		
Value	\$3,076,835		
Other products		53,089	...
Production by process:			
Total, pounds	80,594,033		
Viscose	70,560,808	No data	
Other—nitrocellulose, acetate, and cuprammonium	10,033,225		
Value added by manufacture ^c	\$84,140,544	\$69,582,997	20.9
Horse power	122,406	66,966	82.8

^a Per cent not computed where base is less than 100.

^b Not including salaried employees.

^c The amount of manufacturers' profits cannot be calculated from the census figures for the reason that no data are collected in regard to a number of items of expense, such as interest on investment, rent, depreciation, taxes, insurance, and advertising.

^d Not reported separately.

^e Value of products less cost of materials, factory supplies, containers for products, fuel, and purchased power.

RAYS, RADIATION. See PHYSICS.

RECLAMATION. By far the most important event of the year in relation to reclamation was the passage by Congress and signature by the President of the Boulder Canyon Dam Bill, for the three-fold purpose of irrigation, flood control, and power generation. This measure had been under consideration for several years, was a subject of bitter contest, and figured as an issue in the presidential campaign. The most persistent opposition came from Arizona, which felt that its rights were not being sufficiently conserved to insure the extension of irrigation projects in the future.

Nevada, New Mexico, and Wyoming already have approved the compact, leaving either Arizona or Utah to complete the requirement. The act marks a great stride in provision for development of the resources of this great river and the States under it, and in the opinion of power engineers is the greatest hydro-electric project ever undertaken by the Government. See DAMS; UNITED STATES.

There was little progress in new reclamation projects and less encouragement for their undertaking. The economic agricultural situation resulted in strong expressions of opposition from many quarters to the Federal Government opening up new areas through reclamation until such

are needed for agricultural production. Commitments already made would provide considerable areas, and the condition due to overproduction made it undesirable for the Federal Government consider plans to bring new areas under cultivation.

The *Engineering News-Record* (New York) in an editorial on May 24 attacked the present situation in American reclamation. It was pointed out that private investment in such works had been virtually killed by Federal operations. That Federal works, supposedly on a subsidy basis by which the Government meets half their cost, are under constant pressure from Congress tending toward the complete cancellation or repudiation of the debt owed the Government by the beneficiaries of these projects. "To the Western Congressman the reclamation debt is a mere formality; the only thing that counts is that reclamation projects shall be built with government money." Repayments by beneficiaries have not been made. Congress passed a blanket readjustment act in 1926 wiping out some \$25,000,000 then owed. Requests for further cancellations or extensions of time had continued. This journal questioned whether the reclamation venture brought about by the Act of 1902 should not be stopped to prevent further use by private interests of politics as a means of financing non-paying business enterprises. In the meantime, several important irrigation works went forward which are described in the article on DAMS.

In England, a Royal Commission on Land and Drainage was appointed to consider and report the need for any amendment of present laws under which difficulties of considerable magnitude have arisen since the Land Drainage Act of 1918. The Royal Commission was designed to closely examine the present drainage laws, based largely on a statute of Henry VIII, with proposals for necessary modifications.

In Holland, the Government was increasing its territory by about 550,000 acres, or 10 per cent, by reclaiming land from the Zuider Zee. A great dike, 300 feet wide at the base and rising 25 feet above the water surface at its crest, was being constructed at a total cost of \$37,000,000, to be increased by the cost of drainage, subsidiary dikes, compensation to fisheries, and other interests injured to a total of about \$200,000,000.

Ambitious plans had been made in Italy by Mussolini for the reclamation of 1,750,000 acres of land at a cost of \$400,000,000 to be spread over 14 years. Half the sum was to be expended on the drainage of swamp lands and the balance on irrigation. Farms were to be laid out on the reclaimed areas, and schools, churches, roads, etc., provided. Foreign financing for this undertaking was declined.

THE HINDENBERG EMBANKMENT. An interesting German work which, although built primarily as a railroad embankment, was showing an important effect on tidal currents and deposits, is the line which connects the mainland of Schleswig-Holstein, Festland, with the sandy bar island of Sylt in the North Sea. The railroad on the new embankment had stopped the tidal currents which formerly operated between the island and the mainland and it was thus probable that it would result in silting up this area and in a considerable reclamation of land. The embankment itself, particularly the means employed to make a final closure against strong tidal currents, is an interesting piece of con-

struction. See *Zeitschrift des Vereiners Deutscher Ingenieure* in the issue of January, 1928.

RECTIFIERS. See DYNAMO-ELECTRIC MACHINERY.

RED CROSS, AMERICAN. An organization chartered by Act of Congress in June, 1900, and incorporated in January, 1905. Its purpose is to supply relief to sufferers from war, from disaster, or from any widespread pestilence or famine. The society is a member of the League of Red Cross Societies, made up of similar societies in 54 nations, and of the International Red Cross Committee of Geneva, Switzerland, composed of Red Cross societies of 58 nations, who are signers of the Treaty of Geneva. All powers of control, management, and administration are vested in a central committee of eighteen persons, six of whom are appointed by the President, six elected by the chapters, and six by the board of incorporators.

On June 30, 1928, there were 3532 chapters of the American Red Cross. Service work for disabled veterans and their families was carried on by 2730 chapters, which spent \$1,838,000, while the national organization spent an additional \$862,337.13 for the same purpose. Service to ex-service men and their families included assistance in filing death and disability claims for Federal and State benefits, such as compensation, bonus, etc., and social or financial aid while adjustment of claims was pending. Hospital service was conducted in 73 government hospitals, including those of the Veterans' Bureau, Army, Navy, and National Soldiers' Homes, and in six contract hospitals.

The year brought many opportunities to the Red Cross for rendering service, as there were 88 disasters of major size, 66 of which were in the United States and its insular possessions. Contributions of funds were made to 22 foreign Red Cross societies for the relief of victims of major disasters. Floods in New England in the autumn of 1927 caused the Red Cross to send a large staff of workers there, who did not complete the rehabilitation work until in the summer of 1928. Relief work in the Mississippi Valley continued, and in the spring of 1928 floods in the tributaries of the Mississippi again made 250,000 persons homeless. Other floods and tornadoes swept through Middle Western States causing great damage and considerable loss of life. A dam break in California claimed many lives and caused much loss of property. Tornadoes numbered 29, floods 14, fires 24, hail-storms 4, mine explosions 3, and earthquakes 4. Monetary relief was given following earthquakes which hit Smyrna, Turkey, Corinth, Greece, and Bulgaria. Relief was also extended following disasters in Mexico, Jerusalem, Switzerland, Austria, Albania, and Brazil.

Among the insular possessions of the United States, relief was extended several times in disasters in the Philippine Islands and once each in Porto Rico and Alaska. The West Indies hurricane, which caused great havoc, occurred after the close of the Red Cross fiscal year, but reports of relief operations at the end of the year showed evidences of prompt activity in this region. In the case of this disaster the Red Cross made a nation-wide appeal for a relief fund. No nation-wide appeal was made in the fiscal year ending June 30, 1928, although an appeal limited to New England States was made as a result of the New England flood.

A total of \$16,544,258.87 was expended by national headquarters for disaster work in the United States during the fiscal year ending June 30, 1928. The society spent \$210,092.50 for assistance to victims of disaster in foreign lands. The Nursing Service of the organization had 47,252 nurses enrolled as a reserve and a source of supply for the Army, Navy, Public Health Service, United States Veterans' Bureau, and for duty in emergencies. In 1928, 39,286 persons received certificates after instruction in home hygiene and care for the sick. At the close of the fiscal year, there were 745 public health nurses supported entirely or in part by the Red Cross. They made 1,099,730 home visits, and inspected 874,218 school children. The Nutrition Service conducted 3982 classes and reached 122,386 school children with nutrition instruction.

The year marked the fourteenth anniversary of the establishment of the Life Saving Service, in which 173,506 men, women, and children were enrolled; 16,108 adults and 22,816 juniors passed the tests during the year. Volunteer workers in chapters made 253,040 garments, 2,276,621 surgical dressings, and completed more than 150,000 pages of Braille. The Red Cross first-aid instruction car was in continuous operation, nation-wide, and with it, 734 meetings and demonstrations were held, with a total attendance of 115,236. Approximately 43,445 certificates were issued to those taking systematic courses of instruction in first aid. Welfare service was provided for families in communities where no other agency existed for such service, an average of 10,049 families being aided each month. On June 30, 1928, there were 6,529,252 children enrolled in the American Junior Red Cross. At the close of the membership year, August 31, the senior enrollment was 4,058,949.

The President of the United States is president of the American Red Cross. Other officers in 1928 were: vice presidents, Robert W. deForest and William H. Taft; chairman of the Central Committee, John Barton Payne; counselor, William D. Mitchell; treasurer, Ogden L. Mills; secretary, Mabel T. Boardman; vice chairman in charge of domestic operations, James L. Fieser; vice chairman in charge of insular and foreign operations, Ernest P. Bicknell. Work is centralized in three administrative divisions, one at the National Headquarters, in Washington, one in St. Louis, and the third in San Francisco.

REED, red, CHARLES ALFRED LEE. American physician and surgeon, former president of the American Medical Association, died at Gloucester, Mass., August 28. He was born at Wolf Head, Ind., July 9, 1856, and was graduated from the Cincinnati College of Medicine and Surgery in 1874, returning to that institution as professor of gynecology and abdominal surgery from 1882-96. He became professor of clinical gynecology at the Medical College of Ohio in 1902. As director of the University of Cincinnati from 1891-03, he was instrumental in the merging of the various medical colleges of the city with the medical department of his university, and in 1909 he became professor of clinical gynecology. He taught until 1917, when he became professor emeritus, also having served as gynecologist at the Cincinnati Hospital since 1898. During the World War he was major in the medical corps of the United States Army.

Dr. Reed was made president of the inter-

national executive committee of the Pan-American Medical Congress in 1893, having acted as secretary-general at the organization's first meeting at Washington, D. C., in that year, and he became president of the seventh congress, in 1915. He was also president of the American Medical Association in 1900 and 1901, and of the American Association of Obstetricians and Gynecologists in 1898. Besides being a fellow of the British Gynecological Society, the American College of Surgeons, and the Cincinnati College of Surgeons, he was a foundation member of the International Periodical Congress of Gynecology and Obstetrics, and a corresponding fellow of the National Academy of Medicine of Peru in 1894. He went to Panama in 1905 as a member of the special United States commission. He was awarded the French Legion of Honor in 1908, for his services in promulgating the influence of French civilization in the United States. Dr. Reed wrote many articles for current periodicals, and published a number of books, including: *Text-Book of Gynecology* (1900); *Diseases of Women* (1913); *Marriage and Genetics* (1913); *Stomach and Intestines* (1913); *Chronic Convulsive Toxemia* (1919); and *The First Estate* (1927).

REED COLLEGE. A non-sectarian, liberal college of arts and sciences for men and women at Portland, Oregon, founded in 1911. The enrollment for the autumn term of 1928 totaled 353, of whom 187 were women, and 166 men, distributed as follows: freshmen, 151; sophomores, 94; juniors, 58; seniors, 39; graduates, 5; special students, 6. The faculty numbered 30 in the autumn of 1928, with 5 graduate assistants. The productive funds amounted to \$1,750,336, and the income to \$96,443. There were approximately 40,000 volumes in the library. President, Norman Frank Coleman, LL.D.

REFINING OF METALS. See METALLURGY.

REFORMED CHURCHES THROUGHOUT THE WORLD HOLDING THE PRESBYTERIAN SYSTEM, ALLIANCE OF. This organization was formed in London, England, in the year 1875 with the one great purpose, to encourage comity, co-operation, and efficiency in the accomplishment of Christian work. There are 106 churches connected with the alliance, located on all the six continents. The members and adherents of the Presbyterian and Reformed churches in the world number about 50,000,000, including those in the Evangelical Church in Germany, which has about 113,000. The Thirteenth Council was scheduled to meet June 20-27, 1929, in the First Presbyterian Church, Boston, Mass., with a representation from Great Britain, the European Continent, Africa, Australia, and America. In 1928 the President was the Rev. Charles Marle d'Aubigne, D.D.; the general secretary was the Rev. W. H. Hamilton; and the American secretary was the Rev. Henry B. Master, D.D., whose offices were at 912 Witherspoon Building, Philadelphia, Pa.

REFORMED EPISCOPAL CHURCH. A denomination formed in December, 1873, by clergymen and laymen who had withdrawn from the Protestant Episcopal Church. It was the outcome of an intense discussion carried on over ritualistic tendencies. As indicated in its name, the denomination held that it supported the principles of the Anglican Church of the time of the Reformation, and of the Protestant Episcopal Church as organized after the American

Revolution. Doctrine and polity, otherwise in general accord with those of the Protestant Episcopal Church, were anti-sacerdotal. A general council of the denomination meets triennially, and sat at Philadelphia, in May, 1927. Since the episcopate is regarded as ancient and desirable but not as existing of Divine right, bishops do not constitute a separate house in the general council. The denomination maintains a theological seminary at Philadelphia, Pa., and from that city issues a periodical, the *Episcopal Recorder*. Statistics for 1928 were: Churches, 86; ministers, 91; church members, 25,300; and Sunday school enrollment, 26,000. Bishop Robert L. Rudolph, of Philadelphia, was presiding bishop of the general council.

REFUSE DISPOSAL. See GARBAGE AND REFUSE DISPOSAL.

REGIONAL PLANNING. See CITY AND REGIONAL PLANNING.

REINACH, rī'nāk, THÉODORE. Jewish scholar and member of the Institute of France, died at Paris, October 29. He was born at Saint-Germain-en-Laye, July 3, 1860, and attended the Lycée Condorcet, École des Hautes Études, and École de Droit. After completing his law course, he was admitted to the Paris bar in 1881, and practiced before the Court of Appeals until 1886. He was chosen secretary of the Conférence des Avocats in 1885, and served as president of the Conférence Molé-Tocqueville three years later. In 1890 he went to Constantinople for archaeological research, and in 1894 he commenced a series of lectures on ancient numismatics at the Faculté des Lettres of the University of Paris. He was elected president of the Société des Études Juives in the same year, and in 1903 was appointed professor of religion at the École des Hautes Études Sociales, later becoming a member of its administrative council. He was president of the Société de Linguistique, 1906, and of the Association pour l'Enseignement des Études Juives, 1907, and vice president of the Ligue pour la défense des droits de l'Hellénisme, 1907. Besides being made director of the *Gazette des Beaux-Arts*, in 1906, and editing the *Revue des Études grecques*, 1888-1907, he translated writings from several languages, and wrote a number of authoritative books on Greek literature, archaeology, and religion. His *Short History of Christianity*, to give the English name of one of his most famous works, is highly regarded in several countries and was translated into several languages. He also wrote: a translation of *Hamlet* (1880); *De la Propriété des Hypothèques légales non inscrites* (1880); *Histoire des Israélites depuis leur dispersion* (1884); *Les Monnaies Juives* (1887); *Trois Royaumes d'Asie-Mineure* (1888); *De Archia Poeta* (1890); *Recueil des inscriptions juridiques grecques* (in collaboration with Dareste and Haussoullier 1890-1904); *République athénienne d'Aristote* (translated 1890); complete works of *Flavius Josephus* (translated 1900); *Les Monnaies Juives; une Nécropole royale à Sidon* (1892-26); *L'Histoire par les monnaies* (1902); *Recueil général des monnaies de l'Asie-Mineure* (in collaboration with Babelon, 1904); *Papyrus Reinach* (1905); *Du Progrès de la Religion* (1905); *La Fête de Pâques* (1906); and *Histoire sommaire de l'affaire Dreyfus* (1924).

REINDEER BREEDING. See ANTHROPOLOGY, under *Old-World Ethnography*.

RELATIVITY, THEORY OF. According to the generalized theory of relativity, light waves originating in a strong gravitational field should have a slightly lower frequency than those originating in a weaker field, and hence the lines in the spectrum of a massive star should be displaced slightly toward the red, relative to their position in terrestrial laboratory spectra. The exhaustive researches of St. John at the Mount Wilson Observatory have shown that such a displacement, of the theoretically predicted amount, is present in the solar spectrum. In 1925, Adams at the Mount Wilson Observatory found the lines in the spectrum of the companion of Sirius to be similarly displaced by the amount to be expected from the known mass and absolute magnitude; and spectrograms secured at the Lick Observatory in 1928 have now independently confirmed the result obtained by Adams.

Trumpler's definitive reduction of the Lick Observatory eclipse observations made in 1922, shows conclusively that the stars in the neighborhood of the sun were displaced from their normal positions by the amounts, and in accordance with the law, required by the theory of relativity. Furthermore, accurate measurements on plates made at the eclipse of January, 1926, by the Sproul Observatory expedition in Sumatra, show no measurable difference in the diameter of the moon from that at other times, thus proving that the cooling of the air in the shadow cone does not produce enough refraction to account for the observed deflections of the stars in that way.

Finally, the famous Michelson-Morley experiment designed to detect the earth's motion through the ether, upon the negative result of which was largely based the fundamental postulate of the restricted theory of relativity, has been repeated at Mount Wilson by Michelson himself, with an apparatus capable of detecting a motion only 2 per cent as great as that to be expected; and no measurable effect was observed. The source of the positive effect previously reported by Miller remains unexplained; in none of the other recent repetitions of the experiment has any such effect been found. See PHYSICS.

RELIGION. See PHILOLOGY, MODERN.

RELIGION, LITERATURE OF. See LITERATURE, ENGLISH AND AMERICAN.

RELIGIOUS DENOMINATIONS. See articles on the respective denominations.

REMEY, GEORGE COLLIER. Rear Admiral, United States Navy, retired, died at Washington, D. C., February 10. He was born at Burlington, Iowa, Aug. 10, 1841, and was graduated in 1859 from the United States Naval Academy. He fought in the Civil War in the Union Navy in several engagements, and for a year was a prisoner of the Confederates. After the war he served as an instructor at the Naval Academy, and later was on duty at the Naval Observatory. In the Spanish-American War he commanded the naval base at Key West, Fla. He reached flag rank as a rear admiral in 1898, and in 1900 commanded the United States naval forces in Asiatic waters, at the time of the Boxer outbreak in China. He was retired in 1903, and at the time of his death was one of the oldest American naval officers of his rank. Fifteen retired rear admirals attended

the celebration of his eighty-sixth birthday, at Jamestown, R. I., in 1927.

RENAISSANCE LITERATURE. See PHILOLOGY, MODERN.

RENSSELAER POLYTECHNIC INSTITUTE. A non-sectarian institution for the technical training of men at Troy, N. Y., founded in 1824. In 1928 there were 1426 students enrolled for the autumn term, distributed as follows: Civil engineering, 467; mechanical engineering, 250; electrical engineering, 420; chemical engineering, 159; business administration, 54; biology, 25; physics, 18. The teaching staff numbered 115, an increase of two over 1927. The productive funds amounted to \$4,500,000, and the income for the year to \$563,000. The total value of the property of the Institute, including market value of securities and value of buildings and equipment, was more than \$10,000,000. The gifts for endowment during the year amounted to \$228,500. The library contained 18,355 bound volumes and 19,963 pamphlets. Amos Eaton Hall, a new library and auditorium building, with an auditorium seating capacity of 1400, a reading-room capacity of 300, and stacks for several hundred thousand volumes, was completed and occupied during the year. President, Palmer C. Rickets, E.D., LL.D.

REORGANIZED CHURCH OF JESUS CHRIST. See LATTER-DAY SAINTS, REORGANIZED CHURCH OF JESUS CHRIST OF.

REPTILES. See ZOÖLOGY.

RESEARCH COUNCIL, NATIONAL. A co-operative organization of scientific men of America, interested in pure and applied science, including engineering and industry. It was established in 1916 by the National Academy of Sciences at the request of the President of the United States, for the purpose of coordinating the research facilities of the country for work on war problems involving scientific knowledge. By executive order it was reorganized in 1918 as a permanent body, its essential purpose being to promote scientific research and the application and dissemination of scientific knowledge for the benefit of the national strength and well-being. It maintains a close coöperation with governmental scientific bureaus and their activities, and has the formal recognition and coöperation of 75 major scientific and technical societies throughout the country, its membership being composed in large part of appointed representatives of these societies.

The activities of the council are conducted by a series of major divisions, arranged in two groups. Each division has a chairman and from 20 to 25 members. One group comprises seven divisions of science and technology, representing physics, mathematics, and astronomy; chemistry and chemical technology; biology and agriculture; the medical sciences; psychology and anthropology; geology and geography; and engineering and industrial research. The other group consists of five divisions of general relations: state relations; educational relations; foreign relations; government relations; and research information.

Among the larger undertakings of the Council during 1928 were the maintenance of about 120 research fellowships in physics, chemistry and mathematics, the biological and medical sciences; work on the preparation and publication of International Critical Tables of Nu-

merical Data in Physics, Chemistry, and Technology, of which four of the planned seven volumes had been issued; the establishment, in coöperation with the American Petroleum Institute, of the Central Petroleum Committee which began a series of fundamental investigations in the physics, chemistry, and geology of petroleum, of which investigations about forty were under way; physics of the earth; research surveys of the minor plants; medical problems of animal parasitology, especially ascariasis in children; scientific problems of sex; medicolegal problems; physical causes of deafness in children; problems in tropical agriculture and biology; the atmosphere and man; state archaeological surveys; fellowships in child development; seed germination; structural welding; heat transmission; industrial lighting; highway research; problems of coastal subsidence and elevation; sedimentation; measurement of geological time; and others.

The financial support of the council is derived, first, from a gift of \$5,000,000 from the Carnegie Corporation of New York to the National Academy of Sciences, part of that sum to be devoted to the erection of a suitable building to house the Academy and Council; and second, from other gifts from various sources, mostly made for the specific support of particular undertakings. These sources include the Rockefeller Foundation, General Education Board, International Education Board, Laura Spelman Rockefeller Memorial, Commonwealth Fund, and various individuals and industrial concerns. The council maintains two regular series of publications; *Bulletins*, of which 66 had been issued up to the end of 1928, and the *Reprint and Circular Series*, of which 86 had appeared. It publishes, in addition, miscellaneous publications and its *Annual Report*.

The general administrative officers of the Council for 1928 were: Chairman, George K. Burgess; first vice chairman, Thomas H. Morgan; second vice chairman, John C. Merriam; third vice chairman, Simon Flexner; treasurer, J. S. Ames; permanent secretary, Vernon Kellogg. George E. Hale of the Mount Wilson Observatory, Pasadena, Calif., was honorary chairman. Headquarters of the council are on B. Street, between 21st and 22d Street, Washington, D. C.

RESERVE BANKS. See BANKS AND BANKING; FINANCIAL REVIEW.

RESERVE OFFICERS, RESERVE OFFICERS' TRAINING CORPS. See MILITARY PROGRESS.

RESINS. See CHEMISTRY, INDUSTRIAL.

RÉUNION, rā'u'nyōn'. An island belonging to France, about 420 miles east of Madagascar. Area, 970 square miles; population, according to the census of 1926, 186,637, of whom 180,694 were Europeans, mainly of French origin. The chief towns with their population in 1926 were: St. Pierre, 20,479; St. Denis, 23,390; St. Paul, 21,643; and St. Louis 15,867. The chief port is Pointe-des-Galets. The principal products are rum, sugar, manioc, coffee, tapioca, vanilla, spices, etc. The production of rum in 1926 was 1,124,032 gallons, the greater part of which was exported. The total value of imports in 1927 was 173,640,000 francs; of exports, 146,991,000 francs. The chief exports were sugar and rum, and the chief imports rice and grain. In 1926 837 vessels entered and cleared the ports of the island. There are about 80 miles of railways. The

budget for 1926 showed revenue of 52,502,932 francs and expenditures of 46,076,028 francs. The government of the island is administered by a governor, aided by a privy council and an elected council-general. Réunion is represented in the French Parliament by one Senator and two Deputies.

REVOLUTION, AMERICAN, ANNIVERSARIES. See CELEBRATIONS.

RHETORIC. See PHILOLOGY, MODERN.

RHODE ISLAND. POPULATION. According to a State census made in 1925, the population was 679,260, as compared with 604,397 at the United States Fourteenth Census in 1920, and 595,986 at the census of 1915. The estimated population on July 1, 1928, was 716,000. The capital is Providence.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Hay	1928	45,000	69,000 ^a	\$1,503,000
	1927	46,000	61,000 ^a	1,327,000
Corn	1928	10,000	390,000	526,000
	1927	10,000	380,000	456,000
Potatoes	1928	2,000	244,000	220,000
	1927	2,000	220,000	341,000

^a tons.

MINERAL PRODUCTION. The total value of the State's mineral products for 1926 was \$1,339,398; for 1925, \$1,151,857. In both years the most considerable item was stone. The yield of stone in 1926 was 252,280 short tons, and that in 1925, 153,230 tons; the value of stone produced was: 1926, \$895,718; 1925, \$724,428. There was also some output of lime, graphite, and clay products.

FINANCE. State expenditures in the year ended Nov. 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$6,476,767 (of which \$471,808 was aid to local education); for conducting public service enterprises, \$20,246; for interest on debt, \$664,040; for permanent improvements, \$3,805,379; total, \$10,966,432 (of which \$3,476,193 was for highways, \$879,375 being for maintenance and \$2,596,818 for construction). Revenues were \$10,574,427. Of this, property and special taxes formed 45.1 per cent; departmental earnings and charges for officials' services, 5.6 per cent; sales of licenses and taxation of gasoline, 38.6 per cent. Property valuation was \$1,299,056,254; State taxation thereon, \$1,558,868. Net State funded debt on Nov. 30, 1927, was \$18,385,137.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 196.33. No building of additional railroad trackage was reported in 1928.

EDUCATION. The Rhode Island College of Education opened the Henry Barnard School, an institution to provide students of teaching with practice training, observation, and experimental work in pedagogy. The school-age population of the State in 1927 was placed at 201,045 individuals between the ages of 4 and 21 years. There were enrolled in the public schools 112,689 pupils, of whom 98,300 were in the elementary schools and 14,565 in the high schools.

CHARITIES AND CORRECTIONS. The State Public Welfare Commission, a body of nine appointed members serving terms of six years, has authority under Chapter 413 of the General Laws of the State, over the chief of the State health,

reform, and penal institutions. The institutions under its care in 1928 and administered by its appointees were six in number, and were grouped near together on a tract of 1000 acres in the city of Cranston. They were the State Hospital for Mental Diseases, State Infirmary, State Prison and Providence County Jail, State Reformatory for Women, Sockanosset School for Boys, and Oaklawn School for Girls. The combined total number of inmates was about 3500, of which mental patients formed nearly one-half, numbering 1762 on Jan. 1, 1928. Prisoners in State penal institutions at that date numbered 364.

LEGISLATION. The general assembly of the State met in regular annual session January 3. It created two important commissions, the one to investigate the State public welfare commissions, and the other to study the State boards and other agencies with a view to recommending reorganization and consolidation. The so-called Sayles Bill, a measure to amend the law of evidence by admitting books and entries made in the regular course of business, as evidence in civil proceedings, even though the persons having made such entries were not obtainable to testify, was enacted. The Whitten thoroughfare plan, an enactment of the previous session, opposed by the city of Providence as committing the State to too extensive a highway construction programme, was repealed. The forty-eight-hour working week was made the maximum for children under the age of 16 years. There were passed a reciprocal motor vehicle law and an act requiring the use of a dual braking system on motor vehicles. The use of metal containers to safeguard ballots in transport from polling places was made obligatory. A further bond issue of \$500,000 for completing the Washington Bridge was authorized. The custom of the town of Cumberland, maintained for 181 years, of holding its town and State elections at a separate time from other parts of the State, was abolished. Sunday display of motion pictures in Pawtucket, a city that had been excepted from an earlier permissive act, was rendered legal. A resolution of the State Senate requested members of the State delegation in Congress to seek a Federal referendum on Prohibition. A proposal to expend \$300,000 for a State airport was referred to popular vote.

POLITICAL AND OTHER EVENTS. Governor Aram J. Pothier died February 4, while serving his seventh term. Norman S. Case succeeded to the office and was followed as lieutenant-governor by James G. Connolly. Contract for construction of the Washington Bridge was awarded August 13 by the Washington Bridge Commission on a bid of \$2,984,000 and work started shortly afterward. The city of Pawtucket opposed proceedings of the State board of water purification to require it to build a \$1,000,000 sewage disposal plant in order to end pollution of the Seekonk River. In Providence, upon the disclosure in March of alleged efforts of members of the Ku Klux Klan to control enlistment in the First Light Infantry, Rhode Island National Guard, the second battalion of that regiment was relieved of duty and of arms, and inquiry was instituted.

ELECTION. By a very narrow plurality the popular vote at the election of November 6 was in favor of Alfred E. Smith, the Democratic

candidate for President; he received 118,943 votes; Herbert Hoover, Republican, 117,522. The foreign born population in the mill towns strongly favored Smith. Norman S. Case, Republican, was reelected Governor. Felix Hebert, Republican, was elected United States Senator for the regular term, defeating Senator Peter G. Gerry, Democrat, who ran for reelection. Two Republicans and one Democrat were elected to the House of Representatives.

OFFICERS. Governor, Norman S. Case (from February 4); Lieutenant-Governor, James G. Connolly; Secretary of State, Ernest L. Sprague; Treasurer, George C. Clark; Auditor, Philip H. Wilbourn; Attorney-General, Charles P. Sisson.

JUDICIARY. Supreme Court: Chief Justice, William H. Sweetland; Associate Justices; Chester W. Barrows; Charles F. Stearns, Elmer J. Rathbun, John W. Sweeney.

RHODE ISLAND, BATTLE OF. See **CELEBRATIONS.**

RHODESIA, rō-dē'zhī-ă or -zī-ă. The name given to a stretch of British territory in central Africa, extending northward from the Transvaal to the borders of the Belgian Congo and Tanganyika Territory, constituting a British protectorate; bounded on the east by Portuguese East Africa, Nyasaland, and the Tanganyika Territory, and on the west by the Belgian Congo, Portuguese West Africa, and Bechuanaland. It is divided into Northern Rhodesia and Southern Rhodesia by the Zambesi River; Southern Rhodesia comprises Matabeleland and Mashonaland.

NORTHERN RHODESIA. In 1911 this region was formed from the former provinces of Northeast and Northwest Rhodesia. Area, 287,950 square miles; the permanent European population in December, 1925, was 4624 and the native population, 1,140,642. The seat of the Government is at Livingstone, on the Zambesi. The chief crops are corn, cotton, wheat, tobacco, fruits, and rubber, and the minerals include gold, copper, zinc, and lead. The total value of all minerals mined in 1926 was £111,560, to which lead contributed £68,570. Imports in 1926 amounted to £1,725,682; exports, £490,382. The chief exports are live animals, lead, copper, corn, flour, hides and skins, and tobacco. The administration consists of a governor and executive council and a legislative council, partly official and partly elected, the official members having the majority. Governor in 1928, Sir J. C. Maxwell, appointed Aug. 31, 1927.

SOUTHERN RHODESIA. The area of this section of Rhodesia is estimated at 149,000 square miles and the population, according to a census taken in May, 1926, 39,174 Europeans and about 834,473 natives. Capital, Salisbury.

According to the foreign trade statistics for the first nine months of 1927, the imports were £5,502,000 and the exports £5,730,000, both a decided increase over the similar period of 1926. Total railway earnings in 1927 were £4,908,519 and operating expenses, £4,645,490.

Maize is the largest crop, the 1925-26 yield being 1,400,000 bags, the second highest on record. Tobacco, however, was the crop that was attracting most attention, and the 1927 crop of 17,000,000 pounds of Virginia and 180,000 pounds of Turkish tobacco was the heaviest crop on record and nearly three times as large as the 1926 crop. The problem of dis-

posing of the crop was a serious one owing to the reluctance of English manufacturers to use Rhodesian tobacco. Southern Rhodesia is highly mineralized, and is in the fortunate position of having valuable coal reserves strategically placed with respect to a vast surrounding territory.

The total revenue of the colony as brought out in the returns for the year ended Mar. 31, 1927, passed the £2,000,000 mark, and a substantial budget surplus developed in spite of an unforeseen increase in expenditures on roads and bridges and for medical prevention work.

Executive power is vested in a governor aided by an executive council; legislative power in an elected legislative assembly. Governor and Commander-in-Chief in 1928, Lieut.-Col. Sir John R. Chancellor; Prime Minister and Secretary for Native Affairs, Sir C. P. J. Coghlan. Colonel Chancellor was succeeded as governor in the autumn by Sir Cecil Hunter Rodwell, K.C.M.G.

RICE. The yields in 1928 of ten rice-producing countries reporting to the International Institute of Agriculture, Rome, were 6.5 per cent below the production of 1927 and 1.4 per cent above the average production for the five years 1922-26. The acreage for these countries was only slightly under that of the preceding year and 3.8 per cent above that of the five-year period. The estimated yields of some of the principal producing countries outside the United States were as follows: Japan, 528,919,000 bushels; Java and Madura, 246,304,000 bushels; Korea, 120,426,000 bushels; Cochin-China, 112,468,000 bushels; and Italy, 30,976,000 bushels. India in 1927 produced 2,144,236,000 bushels.

Estimates of the U. S. Department of Agriculture placed the crop of the United States in 1928 at 41,881,000 bushels grown on 965,000 acres, or at the rate of 43.4 bushels per acre. This compared with 44,774,000 bushels produced on 1,012,000 acres, or at the rate of 44.2 bushels per acre in 1927. The average farm price on Dec. 1, 1928, was 71.8 cents and on Dec. 1, 1927, 92.9 cents per bushel, making the total value of the crop \$30,077,000 in 1928, and \$41,616,000 in 1927. The yields of the five States included in the data here given for 1928 were as follows: Louisiana, 18,392,000 bushels; California, 8,073,000 bushels; Arkansas, 7,708,000 bushels; Texas, 7,308,000 bushels; and Missouri, 400,000 bushels. The yield per acre in these States ranged from 40 bushels in Missouri to 60.7 bushels in California. The California crop also ranked high in quality. The acreage as compared with 1927 had been reduced in Arkansas, California, and Louisiana.

For the year ended June 30, 1928, the United States exported 230,432,000 pounds of rice grain and 79,376,000 pounds of rice flour, meal, and broken rice, and imported 33,674,000 pounds of cleaned rice grain not including patna rice, 5,996,000 pounds of uncleaned rice, 1,826,000 pounds of patna rice for use in canned goods and 2,606,000 pounds of rice, rice flour, rice meal, and similar products. On the world's markets, the rice of the Southern States, which is long and medium-grained, competes with the rice of India, Siam, and Indo-China which is sold in Europe and South America. The California product, which is a short-grained rice, goes mainly to Japan, and the California export market therefore is dependent to a great extent on rice production of Japan and her colonies. For three years, exports from the Southern States continued to increase and in 1928 heavy gains were made in

the quantities shipped to Canada and Cuba.

RICE INSTITUTE. A coeducational institution for higher education at Houston, Texas, opened in 1912. The enrollment in the autumn of 1928 was 1303, and the faculty numbered 87. The plant equipment and productive funds of the institution were estimated at \$14,000,000 and the income from endowment for the fiscal year 1927-28 was in excess of \$600,000. The library contained approximately 70,000 volumes. President, Edgar Odell Lovett, Ph.D., Sc.D., LL.D.

RICHARDS, HERBERT MAULE. American botanist and educator, died at New York, January 9. He was born at Germantown, Pa., Oct. 6, 1871, and was educated at Harvard University (S.B., 1891; S.D., 1895). He studied at Leipzig in 1895-96 and traveled in China, Japan, the Straits Settlements, and the Malay Archipelago, 1899-1900. He served as an instructor at Radcliffe College 1892-95 and 1897-98, and also at Harvard, 1897-98, and at Barnard College was tutor (1896-97), instructor (1898-1902); adjunct professor (1902-06), and professor of botany from 1906 until his death. He was also scientific director of the New York Botanical Garden. Professor Richards was associate editor of the *Bulletin* of the Torrey Botanical Club, of *The American Naturalist*, and of *Phytological Researches*. He was a fellow of the American Association for the Advancement of Science (vice president of Section G in 1908), and a member of several chemical, botanical, and biological societies. His investigations dealt largely with the structure and development of algae and fungi and with plant reactions. He was a brother of Theodore William Richards, chemist (1868-1928). See RICHARDS, THEODORE WILLIAM.

RICHARDS, THEODORE WILLIAM. American chemist and educator, professor of chemistry at Harvard University since 1901, died at Cambridge, Mass., April 2. He was born at Germantown, Pa., Jan. 31, 1868. He was one of the world's foremost chemists and was considered by many the leading authority on the subject of atomic weights. He was graduated from Harvard College in 1885, with the degree of bachelor of science, received the degree of bachelor of arts from Harvard University in 1886, and continued his studies in chemistry at Göttingen with Nernst and at Leipzig with Ostwald, and at the Technical School of Dresden, Saxony. His entire teaching career was spent at Harvard University, first as assistant professor of chemistry, 1894-1901, and then from 1901 as professor of chemistry. He was exchange professor from Harvard to the University of Berlin in 1907. Professor Richards was also chairman of the chemical department of Harvard, 1903-11, and director of the Wolcott Gibbs Memorial Laboratory after 1912.

Richards redetermined with great precision the atomic weights of many of the chemical elements, measured the compressibilities of a number of elements and compounds, and rendered valuable experimental services in thermometry and especially in calorimetry. Among many high honors which came to him were the Nobel Prize in chemistry in 1914 (in recognition of his work in determining atomic weights); the Davy Medal of the Royal Society; a medal from the British Chemical Society (before which he was Faraday lecturer in 1911); the Willard Gibbs

medal of the American Chemical Society, and the presidency of this body in 1914-15; membership in the National Academy of Sciences, and memberships or honorary memberships in virtually every scientific society of high standing in America and foreign countries. He also received numerous honorary degrees from American universities and from Oxford, Cambridge, Manchester, Prague (the Royal Bohemian University), and Christiania. He received the Franklin Medal of the Franklin Institute in 1916 and the Lavoisier and LeBlanc medals, Paris, in 1922. Besides the presidency of the American Chemical Society (1914-15), he held the presidency of the American Association for the Advancement of Science (1917), and that of the American Academy of Arts and Sciences (1919-21).

In 1916, Professor Richards was a member of the National Research Council and allied committees, in 1918 he served as consulting chemist to the War Department and the Bureau of Mines. In his later years he busied himself with the significance of changing atomic volume, and other effects of internal cohesive and chemical pressure. Thermo-chemistry and electro-chemistry also occupied him increasingly. He wrote many papers on atomic weights and other subjects. Consult J. Koppel, *Experimentelle Untersuchungen über Atomgewichte von Theodore William Richards* (Leipzig, 1909).

RICHARDSON, HARRY ALDEN. American manufacturer and former United States Senator from Delaware, died at Dover, Del., June 16. He was born at Camden, Del., Jan. 1, 1853, and was educated at public schools at Dover, Del., and East Greenwich, R. I. At sixteen he preferred business to college, and entered the canning business of Richardson & Robbins, which had been founded by his father and James W. Robbins. Upon the death of the elder Richardson in 1894, he became the sole owner of the business. He also had large banking and insurance interests. Mr. Richardson was a Republican in politics, but refused to take part in the disputes that divided the party in his State. In 1890 he was an unsuccessful candidate for Governor of Delaware, but in 1907 he was elected United States Senator, serving from that year until 1913. At the time of the great fire at Baltimore, Md., in February, 1907, heavy demands for payment were made on the Delaware Fire Insurance Company, of which Mr. Richardson was president. He directed the full and prompt payment of all claims and placed his entire resources at the disposal of the company.

RICHMOND AND GORDON, SEVENTH DUKE OF (CHARLES HENRY GORDON-LENNOX). British peer, died at Goodwood, England, January 18. He was born at London, Dec. 27, 1845. He was educated at Eton. As Lord Settrington, the "courtesy" title attached to the dukedom, he sat in the House of Commons as Conservative member for West Sussex, 1869-1885, and for South-west Sussex, 1885-88, but his chief interest was in the army, in which he served in the South African War. He was an aide-de-camp to three English sovereigns—Queen Victoria, King Edward, and King George. He succeeded to the dukedom, and to numerous minor titles in 1903, upon the death of his father, well known as a statesman; and in 1904 he received the Grand Cross of the Victorian Order. In the following year he was created a Knight of the Garter.

As owner of nearly 300,000 acres in England and Scotland, the Duke was one of the greatest landowners in the United Kingdom, and he took an active interest in the advancement of agriculture. He was president of the Royal Agricultural Society of England in 1916.

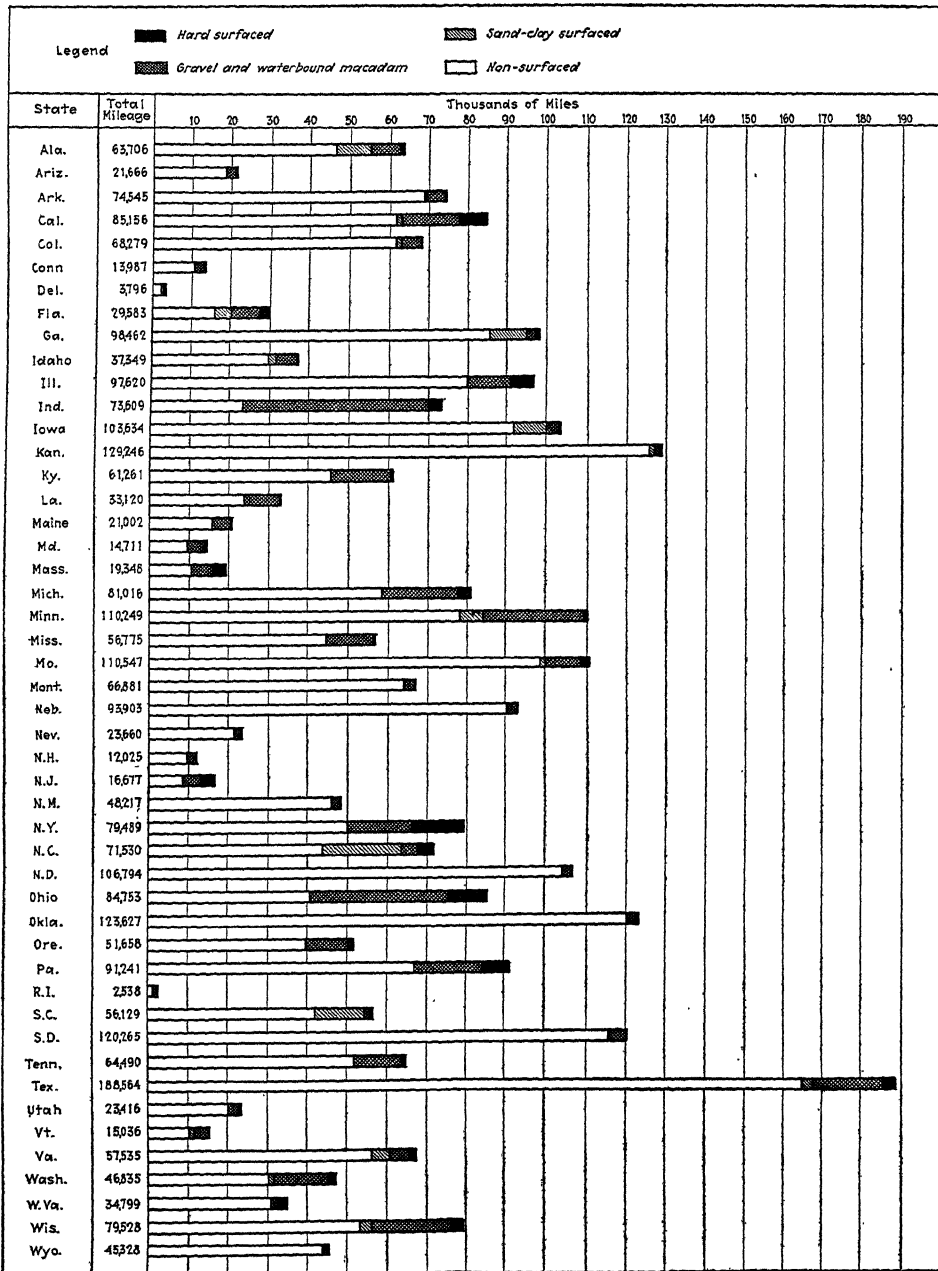
RICKETS. The award of the Nobel Prize (discussed elsewhere under that head) for chemistry in 1928 was said to have been the first time that scientific work done in the direction of human nutrition had been thus honored. The winner was Prof. Adolf Windaus, of Göttingen and the award is the result of experiments which had shown that ultra-violet light can activate the chemical substance known as ergosterol and endow it with the power of preventing rickets. A number of other scientists, however, have contributed to this result. The first experiments actually made with ergosterol were by Prof. George Barger, of Edinburgh. Professor Windaus had also been working in the same field without much success, but the results of Barger led him to renew his efforts and the two men have to some extent worked in collaboration. The roots of the research, however, were much older, dating from the work of Dr. E. V. McCollom and associates, of Johns Hopkins, in the discovery of vitamin D and its anti-rachitic properties and in the other find that ultra-violet rays can independently prevent rickets in animals even in the absence of the vitamin in question. The first scientist to test irradiation of food substances was Prof. H. Steenbock, of the University of Wisconsin, and a patent was secured as a preliminary step in marketing irradiated food substances. One of the leading innovators in this field was Alfred H. Hess, professor of pediatrics in Columbia University, for many years a leading authority on rickets, who attacked the problem from the clinical side. Professor Windaus has taken special pains to acknowledge his indebtedness to Hess, who made his own success possible. Through the irradiation of a great variety of food substances, Hess found that the preventive principle was resident in fatty substances and traced it to the substance known as cholesterol, a near congener of ergosterol which chanced to occur in the former as an impurity. It was in July, 1926, that Professor Barger announced that pure cholesterol is inert, that the preventive substance is ergosterol, which alone is activated by irradiation; hence, the long-known facts that sunlight and codliver oil are naturally preventive of rickets now have a scientific basis. The preventive virtues of the oil are attributable to vitamin D, but there is no longer the supposed need of foods containing this substance when the ultra-violet rays and especially irradiated food substances can produce the same effects. SEE FOOD AND NUTRITION.

RIES, ELIAS ELKAN. American electric engineer and inventor, died at New York, April 20. He was born at Randegg, Germany, Jan. 16, 1862, and was taken to the United States when three years old. He studied at the public schools of New York and Baltimore, Md., received technical instruction at the Maryland Institute, Baltimore, and studied the physical sciences at Johns Hopkins University. He was a telegraph operator for the Gold and Stock and the Western Union companies. In 1880 he removed to New York and became identified with the development of the electric lighting

industry, in the employment of S. Bergmann & Company, the Edison Company, and others, but returned to Baltimore in 1884. He was active in devising methods and instruments for use in electric signaling, railroad controlling, and the development of trolley lines. He is credited with discoveries in connection with the alternating current, and with the invention of an underground basic slotted conduit system which does away with the overhead conductors for trolley cars. He turned his attention to many fields in which electricity was used, and took out more than two hundred and fifty patents on various pioneer inventions. Mr. Ries was a member of the American Institute of Electrical Engineers, the American Electro-chemical Society, the Aeronautical Society of America, an associate member of the Institute of Radio Engineers, and a fellow of the American Association for the Advancement of Science.

RIXEY, PRESLEY MARION. American physician, formerly surgeon general of the United States Navy, and rear admiral, U. S. N., retired, died at his home in Arlington County, Virginia, June 17. He was born at Culpeper, Va., July 14, 1852, and received his medical degree from the University of Virginia in 1873. He entered the naval service as an assistant surgeon in 1874, became past-assistant surgeon in 1877, surgeon in 1888, medical inspector in 1900, and surgeon general, with the rank of rear admiral, in 1902. He was attached to naval hospitals and dispensaries at Philadelphia, Norfolk, and Washington. He was the official physician of President William McKinley from 1898 until the President died at Buffalo, N. Y., in 1901, and was also the official physician to President Roosevelt until the latter retired from the White House; Dr. Rixey continued his ministrations to the former President until the death of Mr. Roosevelt in 1919. He retired from active service in 1910 and lived on his estate in Virginia until 1917. With the entry of the United States into the World War he resumed work with the bureau of medicine and surgery, United States Navy, and acted as inspector general of the medical activities of the Navy until Sept. 18, 1918. He was also a member of the Council of National Defense. He was decorated by the King of Spain for services rendered to the men of the *Santa Maria* following an explosion on that vessel. Dr. Rixey was an ex-president of the Association of Military Surgeons of the United States.

ROADS AND PAVEMENTS. Highway expenditures in the United States, including new construction and maintenance, by 1928 had reached a total estimated at \$1,500,000,000 a year. This includes nothing for city streets, the yearly cost of which runs to a high total. Although progress in highway improvement was marked when considered from the viewpoint of expenditure and of physical accomplishment in a given year, yet it is small compared with the mileage of highways of the country as yet wholly unimproved. Consideration must also be given to the fact that of the highways classed roughly as improved, much of the mileage is only in an elementary or initial stage of improvement, while but a tiny fraction of the entire highway mileage of the country was provided with a wearing surface suitable for the traffic which it carries. Thus, at the beginning of 1928, there were, according to estimates by the U. S. Bureau of Pub-



HIGHWAY MILEAGE BY STATES CLASSIFIED ACCORDING TO SURFACES

[From *Engineering News-Record*, Jan. 23, 1929; based on figures supplied by U. S. Bureau of Roads]

lie Roads, 3,014,000 miles of highway in the United States; but of this, only 589,000 miles, or a little less than 20 per cent, were better than dirt roads. Of the 589,000 miles classed as improved, only 92,000 miles were hard surfaced, while 412,000 were covered with gravel or water-bound macadam and 84,000 of sand-clay surface, the corresponding percentages being 12, 73, and 15.

By hard surface is meant penetration macadam (broken stone with bituminous material sprayed upon it), bituminous concrete, brick and block, and portland-cement concrete. In many of the States, nothing like these percentages would hold good.

An interesting coincidence is that the total road mileage of Texas exceeded slightly the mile-

age included in what is known as the Federal-aid highway system of main interstate and inter-county highways, the figures being 188,564 miles for Texas, against 187,573 miles for the Federal-aid system.

The Federal-aid roads are those toward the construction of which contributions are made by the United States in accordance with a plan adopted in 1921. The figures given in the reports of the U. S. Bureau of Public Roads show that at the close of the fiscal year ending June 30, 1928, there had been "initially improved" by Federal coöperation with the State 72,394 miles of road. Deducting 34 miles of shortening by relocation and 1285 miles "now undergoing State construction," the actually completed mileage June 30, 1928, was 71,074, or about 43 per cent of the Federal-aid highway system. This does not tell the whole story, because within the system named the several States had completed without Federal-aid a large mileage, estimated to bring the total of "initially improved" roads up to about 150,000. Much of this mileage, as already indicated as regards the Federal-aid construction, was of relatively low-grade character. The total mileage of "initial improvement" Federal-aid for the fiscal year ending June 30, 1928, was 8184.

Besides this total of completed "initial construction," there was 2014 miles of "State construction" during the year. The two classes of work cost \$205,044,000, of which the Federal Government paid a little over \$88,000,000, or 43 per cent and the States the balance. These payments were not all made during the fiscal year. The actual disbursement of Federal-aid funds during the year was about \$80,000,000. For the fiscal year beginning July 1, 1929, a total of \$73,000,000 of Federal-aid funds had been allotted by the Secretary of Agriculture, the amounts by States ranging from \$365,000 for Delaware, Hawaii, New Hampshire, Rhode Island, and Vermont to about \$4,231,000 for Texas. Besides the amount expended out of the Federal Treasury for Federal-aid roads, there are appropriated year by year considerable sums toward the construction of roads in the national forests and parks.

In May, 1928, there was signed an act providing for the *Mount Vernon Memorial Highway* to extend from the Arlington Memorial Bridge over the Potomac River in Washington to Mount Vernon. This authorized the appropriation of a total of \$4,500,000 to be expended until the proposed completion of the highway in 1932. Immediately after the act was signed, surveys for the location of the highway were begun by the United States Bureau of Public Roads, which is given charge of the project. For a symposium on "Trends in Highway Development," with contributions from Federal and State highway officials and others, see *Engineering News-Record*, Jan. 3, 1929, in which special stress is laid, editorially and by the special contributors, on lag between highway improvements and highway needs and the problem of future financing. The part of machinery in road construction, for making the highways more attractive, the need for better safeguarding of traffic, better lighting, more tree and shrub planting, are also considered.

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See AGRICULTURE, U. S. DEPARTMENT OF, under *Roads*.

ROCHESTER, UNIVERSITY OF. A non-sectarian institution of higher education for men and women at Rochester, N. Y., founded in 1850. It consists of three schools—the college of arts and sciences, composed of a college for men and a college for women; the Eastman School of Music; and the school of medicine and dentistry. A school of nursing is also maintained in conjunction with the Strong Memorial Hospital, the property of the university. The enrollment for the autumn session of 1928, exclusive of extension division and special music students, totaled 1419, distributed as follows: Arts and sciences, 965, of whom 512 were men and 453 were women; bachelor of music course, 346; medicine and dentistry, 108. For the summer session, 861 were enrolled in the arts college, and 492 in the music school. There were 2023 in the extension division. The faculty had 314 members, as follows: college of arts and sciences, 112, of whom 24 were new appointments; school of music, 93; school of medicine and dentistry, 109, of whom 55 were on full time. The productive funds as of June 30, 1928, were \$28,757,382, and the total resources, including land, buildings, equipment, and endowment, were approximately \$44,261,254. The main libraries contained over 145,161 volumes, the Eastern library over 19,000, and the school of medicine library over 28,000. President, Rush Rhees, A.M., D.D., LL.D.

ROCKEFELLER FOUNDATION. An institution chartered in 1913 "to promote the well-being of mankind throughout the world." The scope of its activities in 1928 was in a broad way indicated by the names of the two divisions through which it carries on its work: The International Health Division and the Division of Medical Education.

The Rockefeller Foundation in 1928 gave aid for the advancement of medical education to a large number of institutions, including the following: Department of Hygiene, Dalhousie University, Halifax, Nova Scotia; Faculty of Medicine, University of Montreal, Canada; National School of Medicine and Pharmacy, Port-au-Prince, Haiti; Faculty of Medicine, São Paulo, Brazil; Faculty of Medicine, Cambridge, England; University of London Medical Center; Faculty of Medicine, University of Edinburgh; Department of Hygiene, University of Zagreb, Jugo-Slavia; Shanghai Union Medical College, the School of Medicine, of Shantung Christian University, Tsinan, and St. John's University Medical School, Shanghai, China; Medical Faculty, American University of Beirut, Syria. The Foundation also provided funds for the support of Peking Union Medical College.

Small grants providing for the purchase of apparatus, or literature, for research, or for the supplementing of salaries, were given to departments of medical schools in France, Italy, and Ireland, which offered exceptional facilities for graduate students. Aid was given for improving the teaching facilities of the departments of physics, chemistry, and biology in 12 colleges and universities in China and Chulalongkorn University Bangkok, with a view to promoting the better preparation of prospective medical

students. Medical literature or scientific equipment was supplied to medical institutions in 20 countries in Central Europe in continuation of the programme of emergency aid to such institutions.

Institutions receiving aid for the furtherance of biological science included: The Institute for Biological Research of the Johns Hopkins University; Yale University (for anthropoloid research); Tohoku Imperial University, Sendai, Japan; the Australian Universities, through the Australian National Research Council (for anthropological studies); University of Hawaii and the Bernice P. Bishop Museum, Honolulu. The International Biological Abstracting Service, the National Committee for Mental Hygiene (New York), and the Canadian National Committee for Mental Hygiene received grants from the Foundation; representatives of 30 countries received fellowships in the Medical Sciences; and scientists from several countries were invited to make study visits as guests of the Foundation. The Division of Medical Education published the ninth, tenth, and eleventh series of *Methods and Problems of Medical Education*, during the year.

Schools and institutes of hygiene and public health receiving aid were: The Harvard School of Public Health, Boston; the Institute of Hygiene, São Paulo, Brazil; the London School of Hygiene and Tropical Medicine, England; the State Institute of Public Health, Prague, Czechoslovakia; and the State Hygienic Institute, Budapest, Hungary. Funds were granted to the Medical School of Harvard University to publish a revised edition of a syllabus of preventive medicine and the Imperial College of Tropical Agriculture, St. Augustine, Trinidad, was assisted in maintaining a chair of sanitation and tropical hygiene.

Field stations in eleven of the Southern States, as well as in Ohio, Corsica, Italy, Poland, Spain, and Fiji, were granted assistance for the training of personnel for public health work, and fellowships in public health were granted to men and women from 28 countries. Among the 15 institutions of nursing education receiving aid were: Yale University School of Nursing, New Haven, Conn.; the D. Ogden Mills Training School for Nurses at Trudeau Sanatorium, Saranac Lake, N. Y.; George Peabody College for Teachers, and the School of Nursing of Vanderbilt University; the D. Anna Nery School of Nursing, Rio de Janeiro, Brazil; and the Nurses Training School, Siriraj Hospital, Bangkok. Fellowships in nursing education were also granted to representatives of 11 countries.

The Foundation continued to participate in studies of yellow fever in West Africa, and in campaigns in Brazil for its reduction. Cases of the disease occurred in West Africa during 1928 in Dahomey, Nigeria, the Ivory Coast, Gambia, and Belgian Congo. At the headquarters of the Foundation's Yellow Fever Commission in Accra, West Africa, Bauer and Hudson, experimenting on monkeys, showed that the virus in the mosquito is non-filtrable and is transmissible through inoculation during the period of incubation in the insect, when infection cannot occur through biting. An outbreak of the disease occurred in Rio de Janeiro with 123 reported cases from May to December, practically the first cases of local origin in the city since it was freed of the infection by the campaign of Oswaldo Cruz twenty years previously. Scattered cases of the

disease also occurred in the states of Sergipe, Pernambuco, and Bahia from March to October, and health authorities in these and other states were assisted by the Foundation in maintaining safe *Aedes aegypti* indices.

Malaria campaigns, demonstrations, and surveys were carried on in 18 countries, which received either assistance toward their budgets for this work or the loan of staff members to serve as consultants in formulating and carrying out campaign programmes, including: Jamaica; Porto Rico; Costa Rica; Honduras; Nicaragua; Panama; Salvador; Argentina; the State of Rio de Janeiro, Brazil; Venezuela; Albania; Bulgaria; Italy; Spain; Ceylon; Palestine; the Philippine Islands; and the state of Mysore, India. Fifteen counties in the six States of Georgia, Louisiana, Mississippi, South Carolina, Tennessee, and Virginia, in the United States, received contributions toward their malarial budget. Malaria field studies and research assistance were given in Porto Rico, Bulgaria, Italy, the Netherlands, Spain, the State of Mysore, India, and the Philippine Islands. In the United States, studies were continued by Dr. Hegner of the Johns Hopkins School of Hygiene and Public Health and by Dr. Taliaferro at the University of Chicago, while opportunities for practical training of malaria personnel were provided at the Edenton Station, N. C., and at malaria stations in Corsica, Italy, and Spain.

Anti-hookworm programmes in Mexico, Costa Rica, Guatemala, Honduras, Nicaragua, Panama, Salvador, Jamaica, Porto Rico, Colombia, Paraguay, Venezuela, Spain, Ceylon, India (Madras Presidency and Mysore), the Netherlands East Indies, Siam, the Straits Settlements and in the South Pacific in Fiji, the British Solomon Islands, and Gilbert and Ellice Islands, received financial aid or advisory service. Hookworm studies were continued at Johns Hopkins University, Vanderbilt University and at the Hookworm Research Laboratory in Andalusia, Ala. Local health organizations in 20 foreign countries and in 113 counties in 24 States of the United States received assistance in the way of financial aid, advisory services, or training opportunities for personnel. The areas outside of the United States where such aid was given included: The provinces of Quebec, British Columbia, and Saskatchewan in Canada; the municipalities of Puerto, Mexico, and Minatitlan in the State of Vera Cruz, Mexico, San Ramon district, Costa Rica, the first district of that country to enter the field of local health work; counties in São Paulo, Brazil; and a county in Paraguay; a district each in Austria, Moravia, Czechoslovakia, Hungary, and Siam; two districts in India; departments in France; and the counties of Cork and Kildare in the Irish Free State, the first counties to organize in this state.

In the United States full-time country health departments were aided in 24 States and contributions were made towards the emergency budgets of 78 county health organizations in the six States of the Mississippi flood area. Seven States and nine foreign countries received help in developing their public health laboratory services; nine American States and the Kingdom of Denmark were assisted in expanding their epidemiological services; and in France, Hungary, and Poland, funds were provided toward the maintenance of bureaus for the study and reform of public health activities. In several countries,

contributions were made toward the salaries and traveling expenses of personnel engaged in rural health work, funds were furnished for public health reconnaissances, and the services of staff members were provided as consultants on public health problems. See UNIVERSITIES AND COLLEGES.

ROCKEFELLER. LAURA SPELMAN MEMORIAL. See PARKS, NATIONAL.

ROCKS. See GEOLOGY.

ROLLINS COLLEGE. A non-sectarian educational institution of higher learning at Winter Park, Florida, founded in 1885. The enrollment for the autumn term of 1928 totaled 314, of whom 42 were seniors, 58 juniors, 73 sophomores, 94 freshmen, and 47 special and graduate students. The faculty for the autumn term of 1928 numbered 68, an increase of 4 over the previous year. The productive funds of the college amounted to approximately \$600,000; the income from endowment, to approximately \$33,000; and income from other sources to about \$140,000. The library contained 22,000 volumes. Rollins College during the year carried on its pioneering in the two-hour conference plan of education, which substitutes for a one-hour recitation period and a one-hour period outside of class for study, a two-hour class-room period which emphasizes personal contact, and individual development and guidance. The college also has a professor of books. The first chair of this nature to be established in America. President, Hamilton Holt, LL.D., Litt.D.

ROMAN CATHOLIC CHURCH. A leading item in the Chronicle of the year was that Pope Pius XI celebrated the golden jubilee of his priesthood December 20, one of the ceremonies of the day being the inauguration of the new wing of the Vatican Library to hold 250,000 volumes, and which was planned by American experts of the Carnegie Foundation. In his reply to the usual Christmas greetings of the cardinals, on December 24, touching the events of the year, the Pope rejoiced at the peaceful turn of the differences between Bolivia and Paraguay, but grieved sadly over the persecutions of the church in Russia and Mexico. The consistory held on December 17, received no nominations of cardinals, but Cardinal Sbarretti was given the suburban see of Sabina making him a Cardinal Bishop, and Cardinals Bisleti and Sincero were advanced to the order of priests in the Sacred College. The Pope confined his address to praise and thanks to all who had made the Eucharistic Congress at Sydney, Australia, in September, so great a success.

The Pope began the year on January 6 with an encyclical on Christian Unity which asked all non-Catholics to return to the original Church. The second encyclical (May 8) was on the duty of reparation, as governments were conspiring against God and the Church, and the third (September 8) was on the organization of studies relative to the Christian Orient. In his Lenten address (February 26) he scored the immodesty of women's dress. He touched on the same subject again before the Congregation of Rites (August 15) and declared the Church always recognized and encouraged the sane ambitions of modern feminism. A brief for the reform of sacred music was issued (April 27) and a message of friendship and encouragement was sent to the Chinese people (August 1). The relations with the Italian Government did not

materially change during the year. A dispute over the establishment of exclusive control of the physical education of Italian youth by Facist officialism was averted by mutual compromise.

Cardinal Mundelein, of Chicago, was received by the Pope (March 12) and presented a check for \$1,500,000 subscribed in the United States for the building of a new college of propaganda. Other Americans received in audiences were a committee of three women representing the United States Catholic Historical Society of New York who presented a facsimile reproduction of America's oldest book, the *Doctrina Breve* (1544) on June 9; officers and sailors from the United States cruiser, *Detroit*, had a special audience February 3; pilgrims from Chicago, July 27; a group from Pittsburgh August 7, and the Rev. Dr. Edmund A. Walsh, for the Near East Welfare Association, July 17, when the Pope gave credit to American generosity for the progress this work had been making.

THE CARDINALS. No cardinals were created at the December Consistory although the number of Italian cardinals had then been reduced to thirty by the deaths of the year. These were Cardinal John Tacci, Secretary of the Congregation for the Oriental Church, on June 30; Cardinal Gaetano De Lai, Secretary of the Consistorial Congregation, on October 24, and Cardinal Francina Nava, Archbishop of Catania, on December 7. This left the Italian members of the Sacred College in a minority of two, there being thirty-two non-Italians and eight vacancies.

Cardinal Hayes, of New York, was made Grand Protector of the American Chapter of the Knights of Malta (April 4), Cardinal Dubois, of Paris, visited Vienna (November) and was received with special honor. Cardinal Cerretti, Papal Legate to the Eucharistic Congress at Sydney, Australia, made a tour of the United States on his way back to Rome (December).

THE HIERARCHY. The title of the Archdiocese of Oregon City was changed to that of the Archdiocese of Portland, Oregon (November 28), with the see residence at Portland. Bishop Edward Hoban, auxiliary of Chicago, was made Bishop of Rockford, Ill., and Bishop Francis Kelly, auxiliary of Winona, succeeded to that same see (February 13). Bishop Thomas C. O'Reilly was installed as Bishop of Scranton, Pa. (March 8); the Rt. Rev. Thomas J. Walsh, of Trenton, was transferred to Newark, N. J., and the Rev. Dr. John J. McMahon, of Buffalo, N. Y., was named Bishop of Trenton (March 7); the Rev. John M. McNamara was consecrated auxiliary of Baltimore (March 29); the Rt. Rev. Bernard J. Sheil was named auxiliary of Chicago (March 30); the Rt. Rev. Joseph Rummel, of New York, appointed (April 4) Bishop of Omaha, Neb.; the Rt. Rev. Francis Johannes was consecrated coadjutor of Leavenworth (May 1). Because of ill-health, Bishop Thomas F. Hickey, of Rochester, N. Y., resigned and was appointed titular Archbishop of Viminandium.

Archbishop John B. Pitaval, retired, of Santa Fe, died May 23; Bishop Patrick J. Keane, of Sacramento, September 1; Bishop Michael J. Crane, auxiliary of Philadelphia, December 26.

The annual meeting of the hierarchy attended by the four cardinals and seventy prelates was held in Washington, September 14, 15, Cardinals O'Connell and Hayes presiding. The Apostolic Delegate read to the meeting two letters

from the Pope, one commending the Catholic University and the other advocating help for the Society of the Propagation of the Faith and the Catholic Near East Welfare Association. The meeting elected a new Administration Committee and discussed the annual reports of the chairmen of the several departments of the National Catholic Welfare Conference.

STATISTICS. The Catholic population of the United States was given in the *Official Catholic Directory* for 1928 as 19,689,049, a gain in a year of 205,753. Meier's *Catholic Press Directory* for 1928 claims 21,453,928 as the total figure, a gain of 6,188,760 in twenty years. The United States Denominational Census for 1926 gives the total as 18,605,003 "members," a gain of 2,875,188 in the ten-year period.

The *Official Directory* lists 25,773 priests, a gain of 783, serving 18,283 churches, a gain of 642. There are 141 seminaries, with 14,432 students. The hierarchy numbers 4 Cardinals, 17 archbishops, and 99 bishops.

EDUCATION. The parochial schools total 7061, a gain of 66 and the pupils enrolled 2,281,837, an increase of 114,596. At the average public school per capita cost, this represents an outlay saved from the general tax levy for education of \$233,883,292. Catholic high schools for boys number 249 with 52,839 pupils; and for girls, 651 with 60,843 pupils. Of the total 1950 Catholic high schools 1050 were coeducational.

The orphan asylums number 351, an increase of 55, with 51,961 children; the homes for the aged, 147, an increase of 19; and the hospitals, 615.

Estimates made for the Bureau of Education of the National Catholic Welfare Conference give these figures for 1928: Elementary schools, 7747; pupils, 2,263,592; secondary schools, 2298; pupils, 225,295; teachers for both, 73,845; men's colleges, 76; teachers, 4813, pupils 71,178; women's colleges, 84; teachers, 1951; students, 25,633.

The Pope appointed Mgr. James H. Ryan as rector of the Catholic University (q.v.), Washington, in succession to Bishop Thomas J. Shahan, resigned. There were 53 American dioceses represented among the 192 students attending the American College at Rome.

CONGRESSES AND CONVENTIONS. The most notable assemblage of the year was the Twentieth International Eucharistic Congress at Sydney, New South Wales, September 5-9, attended by 200,000 devout worshippers. Cardinal Cerretti presided as the Pope's Legate, and Archbishop Hanna, of San Francisco, Bishops Dunn, of New York, Heelan, of Sioux City, Drumm, of Des Moines, and Schwertner, of Wichita, were among the 120 prelates who, with clergy of various ranks, were present at the opening ceremonies in St. Mary's Cathedral, where also the Methodist Premier of New South Wales welcomed the Cardinal Legate and the visitors to the Congress. After the official opening, the general and sectional meetings of the Congress were held, closing on September 9 with a water procession of the Blessed Sacrament six miles long over which six airplanes manoeuvred in the form of a cross, from Manly to Sydney. After reaching the latter city, a land parade formed and marched through the streets to the cathedral where the final benediction was given by the Cardinal Legate.

The Eucharistic Congress for 1930 was planned

to be held in Carthage, once the city of the glories of the ancient Church of Africa. Mgr. C. J. Quille, of Chicago, and Martin Conboy, of New York, were appointed representatives of the United States on the permanent committee of the International Eucharistic Congress. In 1928 the Catholics of Australasia numbered 1,358,123. There were 2599 churches; 1854 priests; 908 brothers; and 9773 sisters of the Religious orders.

The Supreme Convention of the Knights of Columbus was held at Cleveland, Ohio, August 21-23. The annual report showed the membership as 662,468; 40 new councils being instituted during the year, bringing the total to 2525. The total assets amounted to \$27,976,721. The convention recommended a selective membership drive, a campaign against individuals who circulated a bogus oath of members, and expressed sympathy for the persecuted Catholics of Mexico. See **KNIGHTS OF COLUMBUS**.

Other National Conventions were: The Catholic Press Association, at New York, May 24-26; Catholic Hospital Association, Cincinnati, June 18-22; Conference on Industrial Problems, Cincinnati, June 20-21; Knights of St. John, Buffalo, June 24-28; Catholic Educational Association, Chicago, June 25-28; International Federation Catholic Alumnae, Niagara Falls, August 24-29; Central Verein of America, St. Cloud, Minn., August 24-29; Catholic Charities, St. Louis, September 16-20. At the eighth annual Convention of the National Council of Catholic Men at Cincinnati, November 18-21, Archbishop McNicholas deplored the attacks on the Catholic Church and its members made by bigots during the political campaign and urged Catholic laymen to be calm and patient under the ordeal and to resolve that the Church shall be known as she really is.

MISSIONS. The annual sessions of the Society for the Propagation of the Faith held in Rome, April 18, showed a gain of 12 per cent in the total collections for the year, or a sum of 46,380,000 lire. In this amount the United States led all other nations with the subscription of \$1,126,871. Brooklyn was at the head of all the dioceses with a contribution of \$154,049. The Catholic Church Extension Society, at its annual meeting in Chicago, November 15, reported having received during the year a total of \$1,396,610 for its home mission work.

In July three missionary bishops, were named by the Pope. Father Peter Tcheng, a native Chinese, was appointed Bishop of Swan-hau-fu (there were 87 native Chinese priests). The first native Japanese bishop, Hayasaka was consecrated August 6 as Bishop of Hiroshima. The German Jesuit, Father John Ross was consecrated for the Chinese missionary field. In 1928 there were 215 American missionaries, representing 18 different religious congregations of the United States, laboring in China. During the recent political troubles, 138 buildings belonging to the missions were destroyed. The number of Catholics in China was estimated at 2,427,800, and in Corea at 102,000. In India there were 2,247,000, and in the French and English possessions south of China 1,221,600. The Catholics in all Asia totaled 20,000,000, for whom there were 8155 missionary priests. The Jesuits had 772 members in nine Indian mission fields. Of these, 255 were natives. The American Jesuits have charge of the Patna Station, the smallest of these missions,

BIBLIOGRAPHY. The notable books of the year included: Zumarraga, *Doctrina Breve* (1544, a facsimile reproduction of America's oldest book); James Brodrick, S.J., *The Life and Work of Blessed Robert Francis Cardinal Bellarmine*; Ronald Knox, *What I Believe*; John La Farge, S.J., *The Jesuit in Modern Times*; Fulton J. Sheen, *Religion Without God*; Hilaire Belloc, *How the Reformation Happened*; Jorgensen, *An Autobiography*; Denis Gwynn, *The Struggle for Catholic Emancipation*; Eric M. O'Brien, *The Dawn of Catholicism in Australia*; Timothy O'Herlihy, *Catholic Emancipation*; the Rt. Rev. P. J. Walsh, William J. Walsh, *Archbishop of Dublin*; E. Sainte Marie Perrin, *Pauline Jaricot: Foundress of the Association for the Propagation of the Faith*; Thomas Stapleton, *The Life and Illustrious Martyrdom of Sir Thomas More*; the Rev. Louis C. Fillion, S.S., *The Life of Christ*; Francis A. Litz, *The Poetry of Father Tabb*; Moorhouse F. X. Millar, *Unpopular Essays in the Philosophy of History*; V. F. O'Daniel, O.P., *The Father of the Church in Tennessee*; A. Laveille, *Cardinal Mercier*; Michael Williams, *Catholicism and the Modern Mind*; James A. Hyland, C.S.P., *Rome and the White House*; P. J. Gannon, S. J., *Holy Matrimony*.

ROMANCE LANGUAGES AND LITERATURES. See PHILOLOGY, MODERN; SPANISH LITERATURE.

ROME. See ARCHÆOLOGY.

ROTARY CLUBS. Organizations established for the purposes of developing the highest ideal of unselfish service; of making practical application of that ideal to the business and professional life of the individual members, to organizations of which they may be members, and to the communities and nations in which they may live; and of advancing international peace and good will through a fellowship of business and professional men of all nations united in the ideal of service. Membership in the clubs is limited to one representative of each business, profession, or institution in a community. The first Rotary Club was formed in Chicago, in 1905, by Paul Harris, a lawyer; three years later, the second club was formed in San Francisco. In August, 1910, the first 16 clubs held a convention at Chicago to form a national association, and in 1912 an international association was formed to include clubs at Winnipeg, Canada, and London, England.

On Oct. 20, 1928, Rotary International consisted of 2976 clubs with an approximate membership of 138,500 in 44 countries. There were 2259 clubs in the United States, 92 in Canada, 296 in Great Britain and Ireland, and 329 in other parts of the world. The official publication of the organization is *The Rotarian*, a monthly published at Chicago. *The Rotary Wheel* is the official publication for Great Britain and Ireland. Officers for 1928-29 were: President, I. B. Sutton, Tampico, Mexico; vice presidents: Thomas Stephenson, Edinburgh, Scotland; Almon E. Roth, Palo Alto, Calif.; and Eduardo Moore, Santiago, Chile; directors: William C. Achard, Zurich, Switzerland; Wm. H. Campbell, Rochester, N. Y.; John E. Carlson, Kansas City, Kans.; Joseph A. Caulder, Regina, Sask., Canada; R. L. Hill, Columbia, Mo.; S. Wade Marr, Raleigh, N. C.; Arthur H. Sopp, Huntington, Ind.; and Joseph Schulz, Prague, Czechoslovakia; secretary, Chesley R. Perry, Chicago, Ill.; and treasurer, Rufus F. Chapin, Chicago, Ill. Headquarters of Rotary

International are at 211 West Wacker Drive, Chicago, Ill., with a branch office at 2 Pelikanstrasse, Zurich, Switzerland.

ROUMANIA. See RUMANIA.

ROWING. There was unparalleled activity in rowing circles throughout the world in 1928, the competitions in connection with the Olympic Games (q.v.) being the inspiration. The University of California eight-oared crew attained the highest rating through its Olympic triumph gained after its sensational successes in the various college fixtures in the United States. The Californians started on their way to fame by defeating the University of Washington on the Pacific coast. Their next victory came in the intercollegiate regatta on the Hudson where they dethroned Columbia which had won the championship in 1927. Yale returned to its winning ways against Harvard in their annual contest at New London, Conn., and also captured the triangular regatta with Columbia and Pennsylvania. In the final of the Olympic trials at Philadelphia, however, Yale was forced to bow before the amazing California crew. Columbia deserves third place among American college crews with its victory in the Childs Cup contest and its fine showing against California in the intercollegiate regatta, where the Blue and White was placed second. For the fifth year in succession, Cambridge defeated Oxford in their annual struggle on the Thames.

The fifty-sixth national championship regatta of the National Association of Amateur Oarsmen of America was held at Philadelphia, the winners in the more important events being: single sculls, B. C. Turner; senior 4-oared shells, Bachelors' Barge Club; senior double sculls, Bachelors' Barge Club; junior 8-oared shells, Penn. B. C.; intermediate 8-oared shells, Detroit Boat Club; junior single sculls, J. Denney.

J. A. Barry of England won the world's professional sculling championship and Joseph Wright, Jr., of Toronto captured the diamond sculls. See OLYMPIC GAMES.

RUBBER. The most important event in the rubber industry in 1928 was the removal of the Stevenson Restriction Plan on November 1, after it had been in force for some six years. This plan had been adopted by the British Government in 1922 with the manifest object of maintaining the price of rubber by restricting production and exports from British Malaya. It had proved unsuccessful and producers other than those of the British Empire, notably the Dutch, had benefited more through the artificial prices than the British planters whom it was intended to aid. Previous YEAR BOOKS have discussed the origin and effect of the Stevenson Plan and its effect on the rubber industry. When it was announced on April 4 that it was to be abandoned, there was a drop of six cents a pound in the price of crude rubber in a single day, and after a recession the price was confined to within narrow limits. British exports of crude rubber in 1928 were at an average price 25 per cent less than in 1927 and prices at the end of the year were approximately one-half those prevailing at the beginning. On Jan. 1, 1928, crude rubber sold in New York slightly above 41 cents a pound; while at the end of the year the price was about 18 cents.

With the removal of the restriction, the production of crude rubber was greater than at any previous time in the history of the industry,

with an even greater production anticipated for 1929. Likewise, the consumption of rubber throughout the world was in excess of all previous records and for the United States alone was estimated at about 445,000 tons, which was some 75,000 tons more than was used in 1927, as will appear from the accompanying summary. With the remainder of the world taking about 215,000 tons, the total world's consumption would be more than 662,000 tons.

The world production of rubber in 1928 was estimated at 653,933 long tons, as compared with 606,687 tons in 1927. The sources of this supply with the shipment in gross tons were as follows: British Malaya, 259,643; Ceylon, 57,546; India and Burma, 10,790; Sarawak, 10,087; B. N. Borneo, 6505; Siam, 4813; Java and Madura, 58,848; Sumatra, East Coast, 82,511; other Netherland East Indies, 121,770; French Indo-China, 9601; Amazon Valley, 21,129; Mexican Guayule, 3076; other America, 1490; Africa, 6124. Later figures of the U. S. Bureau of Foreign and Domestic Commerce gave 658,000 tons as final statistics, distributed as follows: Middle East, 626,181 tons; Amazon Valley, 21,129 tons; other sources, 10,690 tons. The requirements for 1928 were estimated at 638,000 tons and for 1929 at 737,000 tons. At the end of 1928, the stock in the United States was estimated at 66,166 tons, as compared with 101,685 tons at the end of 1927, there being a consumption during the year of 434,181 tons, as against 372,528 tons in 1927. At the end of 1928, the United Kingdom had a stock of rubber totaling 22,691 tons, compared with 65,663 tons on hand at the end of 1927, with a year's consumption of 47,818 tons, as compared with 44,659 tons in 1927.

The crude rubber and milk of rubber imported into the United States in 1928, according to the U. S. Department of Commerce, amounted to 978,-

107,393 pounds valued at \$244,854,973, as compared with 954,750,355 pounds valued at \$339,-559,142 imported in 1927. The most important source was British Malaya, which sent 558,772,-657 pounds valued at \$138,011,676, as compared with 568,643,977 pounds valued at \$203,827,998 sent in 1927. Other countries which sent large quantities of rubber to the United States were Netherland East Indies, 190,438,542 pounds valued at \$49,054,659, as against 169,551,202 pounds valued at \$62,817,471 in 1927, and the United Kingdom which sent in 1928, 108,305,-042 pounds valued at \$28,929,958, compared with 73,787,953 pounds valued at \$26,742,554.

In the compilation of the statistics of imports of crude rubber into the United States made by the Rubber Association of America, it was estimated that the grand total was 446,421 long tons distributed as follows: Plantation, 429,-191; Paras, 12,050; African, 1258; Centrals, 557; Guayle, 3364; Manicola and Matogrosso, 1. The greater part of the plantation rubber was received at the Port of New York, the total for the year amounting to 373,345 tons. Arrivals at other ports were as follows: Baltimore, 12,317 tons; Boston, 15,969; Los Angeles, 15,-809; Philadelphia, 10,171; Portland, 54; San Francisco, 694; Vancouver, 832.

The statistical department of the Rubber Association of America in its summary for 1928 reported a grand total consumption of rubber amounting to 406,849 long tons as against 342,-726 long tons in 1927, the figures representing information furnished by approximately 92 per cent of the manufacturers and consumers of the United States. These statistics with the corresponding items for 1927 and 1926, indicating the consumption of rubber as regards products, could be divided as in the accompanying tabulation. The Rubber Association also reported the

UNITED STATES RUBBER INDUSTRY—STATISTICS OF CONSUMPTION OF CRUDE RUBBER
AND MANUFACTURED PRODUCTS
(Rubber Association of America) ^a

Product	Crude Rubber Consumed— Long Tons			Total Sales Value of Manufactured Rubber Products Shipments (000 omitted)		
	1928	1927	1926	1928	1927	1926
Tires and Tire Sundries:						
Automobile and Motor Truck Pneumatic Casings	271,487	223,159	209,818	\$622,557	\$624,746	\$680,026
Automobile and Motor Truck Pneumatic Tubes	56,408	47,505	50,608	94,854	99,567	121,891
Motorcycle Tires (Casings and Tubes)	412	403	318	1,834	2,128	2,083
Bicycle Tires (Single Tubes, Casings and Tubes)	966	720	755	2,845	2,470	2,860
Aeroplane Casings and Tubes	116	80	...	411	839	425
Solid and Cushion Tires	12,220	13,667	15,073	24,694	33,190	36,098
All other Solid Tires	634	373	327	2,602	1,032	898
Tire Sundries and Repair materials	6,101	5,329	4,757	21,269	21,447	22,514
Total—Tires and Tire Sundries	348,339	291,186	281,656	\$771,066	\$785,419	\$866,795
Other Rubber Products						
Mechanical Rubber Goods	17,894	15,614	15,145	\$102,258	\$ 98,273	\$ 98,258
Boots and Shoes	16,894	16,524	14,245	93,875	103,892	114,594
Insulated Wire and Insulating Compounds	3,444	3,481	3,047	34,482	34,075	35,487
Druggist Sundries, Medical and Surgical Rubber Goods	1,577	2,330	2,112	8,492	14,048	12,931
Stationers' Rubber Goods	1,271	...	...	2,746	...	...
Bathing Apparel	627	...	...	2,347	...	...
Rubber Clothing	1,248	...	...	8,438	...	...
Automobile Fabrics	961	4,042	2,506	9,110	27,383	22,662
Other Rubberized Fabrics	2,237	...	...	9,695	...	...
Hard Rubber Goods	1,110	702	1,187	7,345	8,073	10,355
Heels and Soles	5,591	3,922	4,312	23,653	19,616	18,373
Rubber Flooring	1,062	922	867	4,707	4,884	4,241
Sporting Goods, Toys, and Novelties	1,880	...	...	7,582	...	...
Miscellaneous, not included in any of above items	3,214	4,003	4,715	14,044	17,717	22,326
Total—Other Rubber Products	58,510	51,540	48,086	\$328,724	\$327,961	\$339,227
Grand Total—All Products	406,849	342,726	329,742	\$1,099,790	\$1,113,380	\$1,206,022

^a Figures represented information furnished by 92 per cent of consumers and manufacturers of the United States.

grand total sales of the various products on the same basis, indicating a total value of production for 1928 of \$1,099,790,000, as compared with \$1,113,380,000 in 1927 and \$1,206,022,000 in 1926.

In the production of solid and cushion automobile tires, the total for the year was 58,457,863 pneumatic tires, 439,519 solid tires, and 67,704 cushion tires, the total pneumatic tires for 1928 comparing with 48,331,311 in 1927, and the total of solid and cushion tires comparing with 58,030 in 1927. The total production of inner tubes during 1928 was 60,134,881, as compared with 53,117,064 in 1927. The shipments from the various tire manufacturers followed very closely the production, being 55,721,937 pneumatic tires in 1928, as against 48,052,414 in 1927. There were shipped, in 1928, 57,845,189 inner tubes, as compared with 54,671,929 in 1927. Shipments of solid tires in 1928 were 437,748 as against 477,154 in 1927, and of cushion tires, 74,854 in 1928, as against 80,853 in 1927. The manufacturers of tires consumed 600,423,401 pounds of crude rubber and 222,243,398 pounds of cotton fabric in 1928, as compared with 514,994,728 pounds and 177,979,818 pounds 1927. These figures, compiled by the Rubber Association of America, were estimated to represent 75 per cent of the industry.

The Rubber Association of America announced the total production of reclaimed rubber in 1928 as 207,869 long tons, compared with 172,723 long tons in 1927. Of the 1928 production, 84,073 tons came from concerns who were reclaimers solely, and 123,796 tons from manufacturers who also reclaimed. The shipments of reclaimed rubber in 1928 totaled 129,070 long tons as against 104,932 long tons in 1927; while the consumption was stated at 156,432 tons in 1928, as against 138,423 tons in 1927. The consumption of scrap rubber in 1928 was estimated at 262,231 long tons, as against 223,188 long tons in the previous year. Those engaged solely in reclaiming taking 151,462 tons in 1928; while manufacturers who also reclaimed took 100,859 tons in the same year. This consumption was given as representing 73 per cent of the entire industry.

See CHEMISTRY, INDUSTRIAL.

RUBBER, SYNTHETIC. See CHEMISTRY, INDUSTRIAL.

RUINS. See ARCHÆOLOGY.

RULE, WILLIAM. American editor, died at Knoxville, Tenn., July 26. He was born near Knoxville, May 10, 1839, and after receiving a common-school education entered newspaper work when twenty-one years of age on *Brownlow's Whig*. His career was interrupted by service in the Union Army in the Civil War, in 1862-65, in which he reached the rank of captain. He was editor of the *Knoxville Chronicle*, 1870-72, and from 1885 until his death, he edited the *Knoxville Daily Journal and Tribune*, which he founded. He was believed to be the oldest newspaper editor in active service in America. Although a Republican in a State and city with many Democratic sympathizers, Captain Rule was highly regarded and was elected mayor of Knoxville in 1878 and in 1898. He served as postmaster of Knoxville and also as clerk of the Knox County Court. He was a member of the Republican National Committee, 1876-84, and a trustee of the University of Tennessee (secretary of the board for forty years and the recipient of the honorary

degree of A.M. on his retirement). In 1873 Captain Rule won national notice by his refusal to fight a duel and his denunciation of dueling as "heathenish." His action was largely instrumental in bringing about the passage of a Tennessee law against dueling. One of Captain Rule's office boys was Adolph S. Ochs, later owner and publisher of the *New York Times*.

RUMANIA. The largest and northernmost of the Balkan States; bounded on the south by the Danube River and Bulgaria; on the east by Russia and the Black Sea; on the north by Hungary, and on the west by Jugo-Slavia; a constitutional monarchy. It is made up of the following divisions: The two old principalities or Wallachia and Moldavia (united in 1861); the Dobrudja; Bessarabia, ceded in March, 1918; Bukowina, in November, 1918; and Transylvania, in December, 1918. Area before the War, including territory taken from Bulgaria by the Treaty of Bucharest, Aug. 7, 1913, 53,849 square miles; population, estimated in 1915, 7,904,104. Area after the War, 122,282 square miles; population, 17,393,149. Chief towns with their populations at the latest available dates; Bucharest, capital, 308,987 (1917); Chisinau, 114,110 (1914); Cernauti, 87,128 (1914); Ismail, 85,600 (1914); and Jassy, 76,121 (1914). The movement of population in 1925 was: Births, 605,053; deaths, 363,054; marriages, 153,480.

PRODUCTION, ETC. The area under each crop and the production for 1927 were as follows: Wheat, 7,752,882 acres, 2,634,465 metric tons; rye, 703,137 acres, 242,644 tons; barley, 4,410,650 acres, 1,249,916 tons; oats, 2,711,020 acres, 851,851 tons; maize, 10,548,557 acres, 3,695,208 tons. A considerable acreage is devoted to vineyards, and tobacco is grown to some extent. The only industries of importance are flour milling, brewing, and distilling. The chief minerals are salt, iron, lignite, copper, and petroleum. Production of crude petroleum in 1926 reached 3,241,805 tons despite a general depression in the industry. This compares with 2,313,345 tons produced in 1925. See JEWS.

COMMERCE. During 1927 the foreign trade of Rumania continued its favorable trend, closing with a large excess of exports. Though the value decreased in terms of the leu, in view of its marked appreciation, the dollar value of imports increased by 17 per cent and of exports by about 30 per cent. High import duties under the new tariff, effective in April, 1927, tended to restrict imports. Exports of cereals in 1927 were the heaviest of any post-war year. Exports of petroleum products also reached a record. There was a 42 per cent increase in the number of hogs shipped and a decrease of about 40 per cent in exports of eggs. Exports were greatly stimulated by reduction or elimination of export taxes on the principal commodities. Imports in 1928 were valued at 32,145,101,000 lei and exports at \$26,919,257,000 lei. The figures for 1927 were: Imports, \$33,428,547,000 lei; exports, \$37,703,178,000 lei.

COMMUNICATIONS. All the main railway lines in Rumania are owned and operated by the state. There are several privately owned lines, mainly in Transylvania, for which information was not available. The length of Rumanian State Railways at the close of 1927 totaled 14,081 kilometers, of which 6427 were main line, 3934 kilometers, branches, and 3720 kilometers, sidings. In addition, the State Railways owned and oper-

ated 721 kilometers of narrow-gauge track. Operating revenues, according to preliminary figures, amounted to 12,334,499,000 lei, and other revenues to 457,309,000 lei; operating and other expenses were estimated at 14,800,000,000 lei, thus creating a tentative deficit of 2,008,192,000 lei. (The average rate of exchange of the lei in 1927 was \$0.006.) The rolling stock in operation at the close of the year comprised 2139 locomotives, 41,560 freight cars, 2032 passenger cars, and 8871 tank cars. The equipment of the State Railways was in extremely bad condition, largely because of inadequate shop facilities and incompetent mechanics. During 1927 the State Railways completed a new boiler shop at Bucharest, heightened the old shops to permit the construction of raised turntables, finished 22 shops at various points throughout the country for minor repairs to rolling stock, and began the construction of a new line from Belgrade, in Bessarabia, to Ismail, a port on the Danube. Plans called for the retracking of 300 kilometers of line annually for a period of six years, and a contract amounting to 4,000,000,000 lei was placed with the Reshitza Co., Rumania's leading iron and steel concern, for rails and other necessary materials.

GOVERNMENT. Under the constitution of Mar. 28, 1923, which nationalized all forests and subsoil, executive power is vested in the King and a council of ministers, the King having a suspensive veto over the laws passed by parliament; and legislative power is vested in a senate of 170 members and a chamber of 347 members. The senate is composed of life members and various officials; the deputies in the lower house are elected by all taxpaying citizens 21 years of age. King in 1928, Michael I. born Oct. 25, 1921; proclaimed King on July 21, 1927, after the death of his grandfather, Ferdinand I. (See *YEAR BOOK* for 1927.) The cabinet at the beginning of the year was as follows: Prime Minister and Finance, Vintila Bratianu; Foreign Affairs, N. Titulescu; Interior, I. G. Duca; Agriculture, C. Argetoianu; Public Instruction, Dr. C. Angelescu; Public Worship, A. Lapedatu; Justice, I. Nistor; Public Health and Social Welfare, I. Inuletz; Labor, Dr. N. Lupu; Communications, C. D. Dimitriu; War, General Angelescu; Industry and Commerce, L. Mrazec.

HISTORY. The outstanding event in Rumania during the course of the year was the so-called "bloodless revolution" which swept the Bratianu government out of existence and brought into office the National Peasants' party under the leadership of M. Maniu. Throughout the early part of the year, both the Government and opposition parties were preparing for the election which both sides felt was bound to come. As noted in previous *YEAR BOOKS*, the Bratianu brothers, who represented the commercial and business groups of the country, had succeeded in holding a strangling grip over the affairs of the country ever since the close of the World War. The National Peasants' party had been continually growing in strength, but had never been able to grasp control of the Government because of the severe regulations of the Bratianu group, which virtually assured success before the election was actually held. In 1928, however, the Peasants' party felt sure that their time had come and chafed at the bit when the inevitable elections were postponed from time to time by the party in power. All kinds of dem-

onstrations were held by the Peasants to make their demands effective. In March, an army of 60,000 marched on the capital and brought provisions and supplies with them because they declared they were going to stay in Bucharest until the Bratianu government resigned. Normally, such a move would result in civil war or riots, but nothing of the kind occurred. The Regency announced that it would not request the resignation of Bratianu, and the Government itself stated that it would not resign under any circumstances. The only tangible result was the withdrawal of the Peasants' representatives from Parliament and the gradual drifting back home of the small army of farmers.

Another huge gathering of farmers in Alba Julia, Transylvania, early in May, estimated at 200,000, failed to move the Regency or cabinet into action consonant with the demands of the peasants. It was felt in many quarters that these mass meetings on the part of Dr. Maniu scarcely helped his cause to any great extent, because when they accomplished nothing they left the Bratianu government just that much stronger. Unwittingly, Prince Carol played into the hands of the Government party. He was requested to leave Great Britain on May 8 on the grounds that he was conspiring against a friendly state. It was thought that this meant he was attempting to get enough support in Great Britain to make his triumphant return to Rumania a success. The Bratianu followers took this occasion to represent themselves as the only group in the country strong enough to prevent the return of Prince Carol.

The situation remained very acute all during the summer and in the early autumn, with Dr. Maniu and his party refraining from participation in the government and establishing a rump parliament which denounced the Government. Early in November, the Regency, evidently convinced that the National Peasants' party was not to be denied, demanded the resignation of the Bratianu government. The Prime Minister claimed that he was in the midst of important policies and could not retire just yet. This excuse was of no avail, however, and he gave up the reins of government on November 4.

After considerable political manœuvring on the part of the Regency, which was not very keen for the appointment of Dr. Maniu, it was compelled to turn to the Transylvanian leader, who formed a government on November 9. One of his first acts of office was the dissolution of the old Parliament and the calling of new elections immediately. The elections were held on December 12 and the Peasants' party was overwhelmingly successful, carrying more than 350 seats out of a total of 376 in the Lower House. Many observers felt that this was the first fair and free election which Rumania had held in years. It was expected that the results of the election and the accession of Dr. Maniu and his party to power would have a very strong tendency to decentralize and democratize the country.

For the treatment of Jews in Rumania during the year, consult the article **JEWIS**.

RUMANIAN LITERATURE. See *PHILOLOGY, MODERN*.

RURAL SOCIOLOGY. See *AGRICULTURAL EXPERIMENT STATIONS*.

RUM RUNNING. See *PROHIBITION*.

RUSHDI PASHA, HUSSEIN. Egyptian statesman, died March 13. Rushdi Pasha was Prime

Minister of Egypt, from April 1914, to Mar. 1, 1919, the entire period of the World War, and his services to the cause of the Allies won high praise from the British, with whom he was closely associated. When Turkey, as an ally of Germany, entered the War, and Egypt was involved as a nominal dependency of Turkey, the position of the Government headed by Rushdi Pasha became highly embarrassing, but he was staunch in his loyalty to the Allies. His position became still more difficult when, after the Armistice, the question arose of the freedom and self-determination of the nations, great and small. Great Britain professed herself unable to grant the demand for the complete independence of Egypt, and Rushdi Pasha tendered the resignation of himself and his cabinet on Mar. 1, 1919. He consented on April 8 to resume office. Ten days later, however, he found his position hopeless and resigned again. He served as vice president of the council under Adly Pasha, when that Egyptian statesman undertook to negotiate a settlement of the Egyptian question in London, but his health failed. He won the high personal regard of both the Egyptians and the British.

RUSSELL SAGE FOUNDATION. An institution established by Mrs. Russell Sage in memory of her husband. The endowment was \$10,000,000, to which \$5,000,000 was added by will. It was incorporated by an act of the Legislature of New York in April, 1907, for the "improvement of social and living conditions in the United States of America." The Foundation does not relieve individual need, but studies and interprets facts with regard to social conditions and methods of social work, makes the information available by publications, conferences, and other means of public education, and seeks in these and other ways to stimulate action for social betterment. The Trustees of the Foundation are Robert W. de Forest, president; Lawson Purdy, vice president and treasurer; John M. Glenn, secretary and general director; directors, Frederic A. Delano, John H. Finley, Mrs. Frederic S. Lee, Dwight W. Morrow, Mrs. Finley J. Shepard, and Harold T. White. Shelby M. Harrison is vice general director.

The work of the Foundation is carried on through departments whose titles and directors are as follows: Charity Organization, Mary E. Richmond (died, Sept. 12, 1928); Industrial Studies, Mary Van Kleeck; Recreation, Lee F. Hanmer; Remedial Loans, Leon Henderson; Statistics, Ralph G. Hurlin; Surveys and Exhibits, Shelby M. Harrison; and Library and Publication. A consultation service on problems of Delinquency and Penology is under the direction of Hastings H. Hart.

The aim of the Charity Organization Department is to study and publish in the field of social case work and family welfare. In recent years its attention has been directed chiefly toward the laws governing marriage and their administration. The study of the subject was completed during 1928, for publication early in 1929 in two volumes, *Marriage and the State*, by Mary E. Richmond and Fred S. Hall, and *Marriage Laws and Decisions—A Digest*, by Geoffrey May. *Marriage and the State* gives the results of an inquiry begun in 1920 into the way in which marriage laws operate in practice. The conclusions reached were based on field studies carried on in 96 cities in 36 different States.

As consultant in delinquency and penology,

Dr. Hart responds to requests for advice and service in this field, especially with reference to legislation, administration, and questions regarding buildings and equipment. During 1928, as a first step toward the correction of the unfavorable conditions surrounding Federal prisoners in county jails, a resolution was drafted by Dr. Hart providing for an investigation of the care and treatment of Federal prisoners by a committee of the House of Representatives. This was presented in December, 1927, and its passage in an amended form, which included the question of prison labor, was obtained early in 1928. Dr. Hart was consulted during the year with reference to plans for public prisons, reformatories, and jails in New York, New Jersey, Massachusetts, Michigan, Ohio, Tennessee, and Louisiana, the estimated cost of these projects being over \$31,000,000.

The Department of Industrial Studies investigates industry in the United States in its effect upon the men and women at work in it and upon their families. The primary interests of the department during 1928 were (1) unemployment, the statistics of employment, and methods of collecting wage statistics; (2) the functioning of works councils and organized groups of wage earners in relation to the management of industry; and (3) methods of research in human relations in industry. Special attention was also given to conditions in this field in foreign countries through connections established with the International Labor Office of the League of Nations, and other international agencies. During the year a report on "Personnel Management in a Retail Store" (William Filene Sons and Company) was completed and was to be published. The director of the department served as Chairman of the technical advisory committee created to assist in the study of the "Effect of Labor Laws upon Women's Opportunities in Industry," which was made by the Women's Bureau of the United States Department of Labor, and was completed by the end of the year, and as Chairman of the Committee on Governmental Labor Statistics of the American Statistical Association.

The Department of Recreation aims to assist in bringing about adequate provision for all forms of wholesome recreation by studying the best methods of promotion, organization, and administration of recreation facilities and encouraging their adoption. During 1928, Mr. Hanmer completed a survey of recreation facilities and needs within the New York region, published as volume v of the report of the Committee on the Regional Plan of New York and Its Environs. A report entitled "The Neighborhood Unit" was also completed by Clarence Arthur Perry, Associate Director, and was scheduled to appear during 1929 in volume viii.

The aim of the Department of Remedial Loans is to conduct a campaign of education for the protection of small borrowers from extortion, to urge the passage and enforcement of adequate laws for the regulation of the small-loan business, and to encourage the formation of credit unions. The Uniform Small-Loan Law, prepared by the Foundation and in force in twenty-four States, was adopted in 1928 by Louisiana, despite plentifully financed opposition of loan sharks, but failed of adoption in Kentucky. The Louisiana law was later declared unconstitutional by a lower court, but at a special session of the Legislature, it was reenacted without the exemptions which

had been held to be unconstitutional. The chief violation of the uniform law in recent years has been "salary purchasing." The "salary buyer" attempts to escape the restrictions of the law by pretending that his transaction is not a loan but a purchase of wages earned but not yet received. To strengthen the Uniform Law against this threatened evasion, a new section was added during the year in New York and Virginia. In Maryland, where the same section had been previously adopted, its constitutionality was established by a court of last resort for the first time in any State. In addition to extending the Uniform Law and assisting in its administration, the department continued to encourage credit unions as a practical and constructive means of meeting the need for small loans.

The Department of Statistics makes statistical investigations relating to social conditions. It advises members of the staff of the Foundation and others engaged in social work concerning sources of statistical information, the planning and conduct of statistical inquiries, and the presentation of statistics. It reviews all statistical material intended for publication by the Foundation. During 1928 the department continued and developed its collection of comparative monthly statistics in family case work, hospital social work, mothers'-aid and child-welfare work.

The department's studies, so far as published during 1928, appear in two papers: "Trends in Loads and Costs in Child Welfare in New York State," in the *Proceedings in the New York State Conference on Social Work*, 1927; and "Some Results of the Two Years' Study of Family Case Work Statistics," in the *Proceedings of the National Conference of Social Work*, 1928.

The purpose of the Department of Surveys and exhibits is to study and develop methods of presenting information about social conditions and social work to the public. The three major studies upon which the department's staff was at work during the twelve months were: a study of "Publicity for Social Work," by Evart G. Routzahn and Mary Swain Routzahn; a study of immigrant contributions to the arts and crafts, by Allen Eaton; and a bibliography of social surveys. The two latter studies were still in progress at the end of the year. The first study named was published early in 1928. Mr. and Mrs. Routzahn were actively connected with the Committee on Publicity Methods in Social Work and with the Public Health Education Section of the American Public Health Association, editing the *News Bulletin* of the former and the Education and Publicity Section of the *Journal* published by the latter.

The library of the Foundation which is open to all who are interested in social welfare, contained 27,906 bound volumes and 96,061 pamphlets and unbound reports. About 250 periodicals are regularly received. Six numbers of the bi-monthly bibliographical bulletin were issued on the following subjects: Credit unions, community organization, industrial and labor problems, books on social subjects published in 1928, social case work (revised), and cost and standards of living. The library also, in response to requests, prepared 178 typewritten bibliographies on other subjects.

During 1928 the Foundation continued its financial support of the Committee on Regional Plan of New York and Its Environs, of which Thomas Adams is director. That committee's re-

ports, when completed, will include ten survey volumes presenting the facts and information upon which the Plan is based, and two additional volumes, to be published in 1929, containing the proposals of the committee in the form of a comprehensive plan for the development of the region. Six of the ten survey volumes were published during 1928.

RUSSIA. A republic comprising the greater part of the former Russian Empire; officially entitled the Union of Soviet Socialist Republics. Capital, Moscow.

AREA AND POPULATION. According to the Soviet Union Information Bureau, which supplied much of the material used in this article, the area of the Union of Soviet Socialist Republics is 8,144,228 square miles. The population as of Jan. 1, 1928, was estimated by the Central Statistical Board at 149,900,000. The population, according to the census of 1926-27 was 147,013,600, including 71,024,300 males and 75,989,300 females. In 1914 the population of the same territory was 138,200,000. The population is 82 per cent rural, 18 per cent urban. It is composed of 182 different nationalities, speaking 149 different languages and dialects. The death rate of the country was 20.9 per thousand in 1926 as compared with 28.3 in 1913. In Moscow the figures were, respectively, 13.4 and 23.1. On Jan. 1, 1928, the figure for unemployment was 1,352,000.

The Union of Soviet Socialist Republics is composed of six constituent republics with their respective populations as follows: Russian Socialist Federated Soviet Republic, 100,858,000; White Russian Soviet Socialist Republic, 4,983,900; Transcaucasian Federation, 5,850,700; Turkoman Soviet Socialist Republic, 1,030,500; Ukrainian Soviet Socialist Republic, 20,020,300; Uzbek Soviet Socialist Republic, 5,270,200. The Russian Socialist Federated Soviet Republic contains 76 per cent of the population and 94 per cent of the area of the Union. It contains eleven autonomous republics, twelve autonomous areas, with further subdivisions into provinces, counties, districts, and townships. The other constituent republics embrace similar subdivisions of autonomous republics and areas, along racial or national lines.

The census showed a strong trend of population to the cities, in line with the industrialization of the past few years. Since the urban census of 1923, Moscow and Leningrad had each increased its population by over 500,000. Other large cities had gained an average of 30 per cent in population in the three years. Population of the principal cities, census of 1926-27: Moscow, 2,025,947; Leningrad, 1,614,008; Kiev, 513,789; Baku, 452,808; Odessa, 420,888; Kharkov, 417,186; Rostov-on-Don, 308,284; Tashkent, 323,613; and Tiflis, 292,973.

EDUCATION. Public education in the Soviet Union is a charge against the six constituent republics and against the localities concerned. Local appropriations are in the aggregate somewhat larger than those of the republican government. Total appropriations for education were upward of \$400,000,000 in 1927-28, as compared with \$317,200,000 in 1926-27 and \$236,400,000 in 1925-26. In the autumn of 1928 the Central Statistical Board reported that 11,372,507 children were in primary and secondary schools (excluding kindergartens), 46 per cent more than before the World War. There were 118,184 schools as compared with 106,400 in 1913. The teaching

staff numbered 337,435. In the cities, 98.4 per cent of the children of school age were in school, and in the villages 66.4 per cent. In the teaching in various schools throughout the country, a total of 70 national tongues were used. Since the famine year of 1921, enrollment in the schools had shown a steady growth. In colleges and universities the growth had been commensurate. There were 136 of these institutions in 1926-27 with an enrollment of 168,000. In addition, 1,642 higher trade schools had 243,810 students. The warfare against illiteracy was conducted in 54,600 schools for adults with 1,317,000 pupils, as compared with 1,600,000 pupils the previous year. These schools for adults were conducted largely under voluntary auspices, particularly by the labor organizations.

Among the general population (above seven years) illiteracy had decreased by one-third in the past six years. The census of 1926-27 revealed that 65.4 per cent of the males were literate and 36.7 per cent of the females. In the last pre-war census (1897) the figures were, respectively, 37.9 and 12.5 per cent.

PRODUCTION, ETC. Land and natural resources are held in trust by the Government for the general population, and may not be acquired by private title. Every citizen is entitled to secure land for cultivation, the form of tenure being that of perpetual leasehold. Natural resources are exploited by State trusts, by mixed companies, under concession, in which the State has a participating interest; or by private companies under concession. Such private concessions run for a limited time (generally 15 years). The transport system, and the posts, telephones, and telegraphs are operated as government departments. Industry is conducted largely by State trusts. Private factories employing not over 20 persons may operate without formality. For enterprises employing 21 to 100 persons permission of local authorities is required, and for larger enterprises a special leasing or concession agreement from the Government is necessary.

Many industrial enterprises are run by the co-operatives. These organizations had increased their membership from 10,000,000 in the fall of 1924 to 35,000,000 in 1928. They conduct over 50 per cent of the internal trade and 10 per cent of the foreign trade. The consumers co-operatives alone had some 75,000,000 stores at the beginning of 1928 and their turnover in 1926-27 was over \$5,000,000,000.

In October, 1928, the Central Statistical Board reported a grain crop of 74,764,000 metric tons from 98,698,000 hectares, compared with 74,128,000 metric tons in 1927. The wheat crop (included above) was 22,399,000 metric tons as compared with 20,389,000 in 1927. Total pre-war production of all grain in the same territory was estimated at 75,000,000 metric tons. The cotton crop of 1928 was estimated at 860,000 tons (unginned), as compared with 632,000 metric tons in 1927 and 744,300 in 1913. The sugar-beet crop was 10,641,000 metric tons, as compared with 9,863,000 metric tons in 1927 and 10,230,000 in 1913. Other technical crops registered gains, except sunflower seed, which showed a decline of 16 per cent from 1927. At the beginning of 1928, horses numbered 30,931,000; cattle, 67,327,000; swine 20,222,000. All livestock except horses was above the pre-war figure. In the autumn of 1928 there were 32,000 tractors in use, as compared with 500 in 1913. Owing to the

fact that the grain crop of 1927 was about 2,000,000 metric tons less than that for 1926, coupled with increased consumption, grain exports for the agricultural year ending June 30, 1928, fell to 512,000 metric tons, from 3,068,000 the previous year.

The industrial output for 1927-28 (fiscal year ending September 30) was over 20 per cent above 1926-27 and 25 to 30 per cent above the pre-war level. The year was the first since the War in which the industrial advance was dependent wholly on new construction and equipment. In 1921 the industrial output was only 15 per cent that of 1913. The only large-scale industry still below the pre-war level in 1928 was that of ore mining. Upward of 85 per cent of the industrial output was from large State trusts operating under the general supervision of the Supreme Economic Council under a plan of balanced economy drawn by the State Planning Commission (Gosplan), which acts as a sort of economic general staff.

In the autumn of 1928 it was announced that \$850,000,000 had been allotted for capital improvements in State industry for 1928-29, as compared with \$610,000,000 in 1927-28. The funds are derived from profits, depreciation account, and governmental budget appropriations. They do not include money expended for the development of electrification. The allotments for 1928-29 included \$125,000,000 for the iron and steel industry, \$114,000,000 for the oil industry, \$112,000,000 for the textile industry, \$82,000,000 for the coal industry. The average number of workers employed in large-scale State industry was 2,103,000 during the first half of 1927-28, as compared with 2,012,000 in 1926-27.

Three large-scale development projects were inaugurated in the Soviet Union, which were expected to accelerate materially the advances in productivity. These were: (1) the Dnieper River hydro-electric development, with attendant waterway and irrigation projects. This includes the construction of a power plant of 650,000 horse power, the largest in Europe (somewhat larger than Muscle Shoals in the United States), the building of sluiceways which will extend the navigability of the Dnieper by 800 miles, and the irrigation of hundreds of thousands of acres of arid land. Col. Hugh L. Cooper, builder of Muscle Shoals, was chief consulting engineer. The total cost of the work, which was begun in 1927, was to be \$100,000,000. (2) The Siberian-Turkestan Railway, 920 miles long, was to connect the cotton belt in Central Asia with the grain and timber districts of Siberia, cutting the present railway distance between the two sections by 65 per cent. Construction was begun in 1927 and the total cost was to be \$100,000,000. (3) The Volga-Don Canal, connecting the two rivers, was to give the Volga, the chief waterway of the Soviet Union, which empties into the landlocked Caspian Sea, an open water outlet on the Black Sea. The project involves the creation of a deep-water port at Rostov-on-Don and the construction of a ship canal, 60 miles long, connecting the two rivers. Final plans were approved in the fall of 1928. The Dnieper project and the Siberian-Turkestan railway were to be completed in 1932.

The total ascertained coal deposits in the Soviet Union were estimated at 474,673,000,000 metric tons, of which approximately one-eighth was anthracite. Production of State trusts

in 1927-28 was 34,111,000 metric tons as compared with 30,940,000 in 1926 and a total production of 28,356,000 in 1913. In addition, various private enterprises produce about 1,500,000 annually.

Oil production for 1927-28 was 25 per cent above 1913 and oil exports were nearly triple the pre-war volume. The output was 11,502,000 metric tons as compared with 10,184,000 in 1926-27 and 9,215,911 in 1913. Exports were 2,673,700 metric tons, as compared with 2,038,800 in 1926-27 and 914,032 in 1913. The increase in production for the year was 13 per cent and in exports 34 per cent. During 1928 it was announced that under various contracts the Standard Oil Company of New York and the Vacuum Oil Company were purchasing annually from the Soviet Naphtha Syndicate oil products worth \$10,000,000. During the year a contract was concluded with the Spanish Oil Monopoly whereby that organization purchases from the Soviet Syndicate oil amounting to about half the Spanish consumption. Oil resources of the Soviet Union are estimated at 2,883,800,000 metric tons.

The Soviet textile industry increased its output materially in 1927-28 and ran well above pre-war level. The cotton industry turned out 314,000 metric tons of yarn, as compared with 268,400 in 1926-27, and 2538 million meters of finished cloth, as compared with 2343 in 1926-27. The woolen industry produced 48,100 metric tons of yarn, as compared with 41,243 in 1926-27. The output of the linen industry was 2 per cent less than in 1926-27.

In the metal industry the output increased 23.5 per cent in 1927-28, largely due to marked advances in concentration of machinery, and in manufacture of railway equipment and in shipbuilding. In the industry as a whole, the output was 21.5 per cent higher than in 1913. Production of rolled iron and steel reached approximately the pre-war figures, while that of pig iron was 78 per cent of the output for 1913. Statistics of iron and steel production, in metric tons was as follows:

	1927-28	1926-27	1913
Pig iron	3,283,000	2,963,000	4,206,000
Steel	4,150,000	3,586,000	4,247,000
Rolled iron	3,367,000	2,731,000	3,509,000

Large increases were registered in many other industries during 1927-28, notably the electrical industry, which had an output of \$114,000,000, nearly triple the pre-war figures, the chemical, leather, rubber, and paper industries. The newspapers of Moscow were supplied with domestic newsprint paper in the autumn of 1928 for the first time in history. The new paper plant which was under construction at Balakhna would supply 60,000 tons of newsprint yearly. The gold and platinum industries are now in the process of expansion.

The Soviet Government was pushing the development of a comprehensive superpower scheme in which over a score of plants were in operation in 1928. Consumption of electric power in that year was quadruple the pre-war rate. Expenditures for new construction in 1928-29 were to amount to \$175,000,000, of which \$100,000,000 was appropriated from the Federal budget, as compared with \$75,000,000 in 1927-28. The remainder was to be expended by localities and industrial enterprises.

COMMERCE. The foreign trade turnover over all frontiers is shown in the following table:

1913	\$1,490,495,000
1922-23	199,800,000
1923-24	484,910,000
1924-25	666,925,000
1925-26	733,130,400
1926-27	762,869,500
1927-28	886,830,000

The unfavorable balance of trade for 1927-28 was \$88,580,000, as compared with a favorable balance of \$28,989,500 for 1926-27. The change was due to the big drop in grain exports. Exports other than grain increased in 1927-28 by 33 per cent. The trade over the Asiatic frontiers, which is principally with Persia, China, and Japan, increased by about 50 per cent in 1927-28. The trade over the European frontiers was: Exports, 635,481,000 rubles, imports, 820,059,000 rubles, total, 1,455,540,000 rubles (\$744,453,000) an increase of 12 per cent over the previous year.

The principal exports are grain, oil products, furs, timber, butter, eggs, manganese, ore, and oil cakes. The principal imports are raw cotton, industrial machinery, agricultural machinery, including tractors, metals, leather, wool, tea, and paper. In 1927-28 nearly 90 per cent of the imports consisted of production goods, i.e., raw materials and machinery.

The principal countries taking Soviet exports are England (26 per cent), Germany (22 per cent), Latvia (7.5 per cent), France (7 per cent), and Persia (5.6 per cent). The principal countries furnishing Soviet imports are Germany (23 per cent), United States (20.5 per cent), England (14.2 per cent), and Persia (5.4 per cent). See Table on page 671.

The principal Soviet imports from the United States are cotton, industrial equipment, agricultural machinery, metals, chemical products, binder twine, automotive equipment, and typewriters and adding machines. According to figures of Soviet trade organizations in the United States, purchases of American products for shipment to the Soviet Union in 1927-28 aggregated close to \$100,000,000, or about two and a half times the annual pre-war figure.

The extent of Soviet purchases in the United States, in recent years is shown in a table, page 671.

The principal Soviet exports to the United States are furs, manganese, precious metals, sheep casings, flax and tow, hides and skins, bristles, and licorice root.

The figures for American-Russian trade by Soviet customs statistics, are as follows:

	Exports to United States	Imports from United States
1913	\$7,290,000	\$40,730,000
1923-24	4,377,500	49,955,000
1924-25	14,471,500	103,618,000
1925-26	15,759,000	62,881,500
1926-27	11,948,000	74,984,000
1927-28	14,986,500	96,459,500

FINANCE. By the end of June, 1924, Soviet currency was established on a gold basis, and since that time there have been no unsecured paper issues. The budget of Soviet fiscal years, ending September 30, in millions of rubles (1 ruble equals \$0.515) were as follows:

	1924-25 (actual)	1925-26 (actual)	1926-27 (actual)	1927-28 (actual)
Revenues	2,905.1	3,900.7	5,201.3	6,350.8
Expenditures ...	2,875.6	3,867.8	5,151.3	6,239.1

SOVIET IMPORTS ACROSS EUROPEAN FRONTIERS

(Fiscal year beginning October 1)

[In rubles: 1 ruble = \$0.515]

	1924-25	1925-26	1926-27	1927-28
Industrial Equipment	68,891,000	108,741,000	146,406,000	247,300,000
Raw Materials and Semi-manufactured Products	315,897,000	365,298,000	381,617,000	435,983,000
Including:				
Cotton	121,897,000	104,450,000	120,651,000	134,866,000
Wool	39,240,000	31,448,000	35,323,000	42,582,000
Hides	15,417,000	22,857,000	37,650,000	38,508,000
Other	139,343,000	206,543,000	187,993,000	220,027,000
Agricultural Machinery and Tractors	28,883,000	43,028,000	23,040,000	20,678,000
Consumers' Goods	195,766,000	117,144,000	45,308,000	95,261,000
Miscellaneous	34,335,000	39,466,000	27,438,000	20,837,000
Total Imports	643,772,000	673,677,000	623,809,000	820,059,000

SOVIET EXPORTS ACROSS EUROPEAN FRONTIERS

	1924-25	1925-26	1926-27	1927-28
Grain	51,280,000	155,763,000	201,787,000	34,228,000
Butter	27,575,000	30,850,000	34,224,000	39,120,000
Eggs	25,637,000	23,629,000	28,954,000	40,462,000
Poultry	5,025,000	2,936,000	7,112,000	10,687,000
Meat	1,132,000	2,305,000	4,850,000	16,073,000
Flax and Tow	52,200,000	43,919,000	19,267,000	20,703,000
Furs	60,078,000	63,220,000	80,319,000	113,990,000
Timber	63,209,000	52,498,000	71,135,000	80,256,000
Oil Products	62,767,000	69,487,000	82,813,000	98,239,000
Manganese Ore	17,891,000	21,285,000	24,090,000	13,752,000
Miscellaneous	141,080,000	123,232,000	132,689,000	167,971,000
Total Exports	507,844,000	589,124,000	687,240,000	635,481,000

SOVIET PURCHASES IN THE UNITED STATES BY COMMODITY GROUPS

	1925-26	1926-27	First half 1927-28
Raw Materials			
Semi-Manufactured Goods	\$34,515,306	\$50,230,991	\$48,982,994
Industrial and Electrical Equipment	622,974	1,924,948	1,122,370
Automotive Equipment	4,085,742	10,867,479	6,928,150
Agricultural Machinery, Livestock, etc.	291,311	1,614,166	1,236,005
Consumers' Goods	8,117,053	6,617,953	6,726,240
	1,060,911	716,715	473,440
Total	\$48,693,297	\$71,971,715	\$65,469,199

Revenues for 1927-28 showed gains in all departments except the agricultural tax, as compared with the preceding year. Revenues from loans were 670,000,000 rubles, an increase of 142 per cent over the same period of the preceding year. The Federal budget for 1928-29 was fixed in preliminary figures at 6,970,000,000 rubles.

Currency in circulation on Sept. 1, 1928, was 1,803.1 million rubles, as compared with 1,670.8 million rubles on Oct. 1, 1927. The retail price index (prices of 1913 equal 100) as of Oct. 1, 1928, was 210.8 as compared with 198 as of Oct. 1, 1927. The wholesale price index was 176.1 as compared with 170 the previous year. The balance sheet of the State Bank as of Oct. 1, 1928, showed liabilities and assets of 4,371,397,000 rubles, an increase of 508,203,000 rubles as compared with Oct. 1, 1927. The capital was 250,000,000 rubles. Deposits and current accounts were 1,553,125,000 rubles, an increase of 260,196,000. Assets of bullion, coin, precious metals, and foreign currency were 291,022,000 rubles, a decrease of 8,900,000.

TRANSPORT. In 1928 the railway mileage of the Soviet Union had reached 47,940, as compared with about 36,000 in 1913 and 42,000 miles in 1917. Under the five-year plan drawn up for the railways, construction of 11,500 miles of line is projected during the period to cost \$950,000,000. In 1926-27 revenues from operation were \$768,277,000 and expenditures \$650,960,000, giving a net profit of \$117,317,000, as compared with \$91,567,000 the previous year. Average daily freight loadings were 31,183, as compared with 27,868 the previous year. New loco-

motives built in Soviet plants during 1927-28 numbered 480, as compared with 441 the previous year. Freight carried in 1926-27 was 82,607 million ton-kilometers as compared with 65,695 in 1913. There were 7000 miles of airplane lines in operation in 1928.

GOVERNMENT. A description of the constitution of the Union of Soviet Socialist Republics will be found in the YEAR BOOK for 1923. At the close of 1927, the Council of People's Commissars, the executive cabinet of the Soviet Government, was composed as follows: Chairman of the Council of People's Commissars, Alexi I. Rykov; vice-chairmen of the council, J. E. Rudzutak, V. V. Schmidt, and V. V. Kuybyshev; Commissar for Army and Navy, K. E. Voroshilov; for Trade, A. I. Mikoyan; for Foreign Affairs, George Tchitcherin; for Transportation, J. E. Rudzutak; for Posts and Telegraphs, N. K. Antipov; for Finance, N. P. Briukhanov; for Labor, V. V. Schmidt; for Peasants and Workers' Inspection, G. K. Orjonikidze; Chairman of the Supreme Economic Council, V. V. Kuybyshev; Director of Central Statistical Administration, V. P. Miliutin, Chairman of the Central Executive Committee of the Soviet Union, M. I. Kalinin, G. I. Petrovsky, A. G. Cherviakov, Gazanfar Mussabekov, Netyrbay Aitakov, Faizulla Khodzhaev. These chairmen of the Central Executive Committee are the presidents of the six constituent republics.

HISTORY

FOREIGN RELATIONS. The most important event in the field of foreign affairs in 1928 was the participation of Soviet delegates in the

Geneva disarmament conference in March. Mr. Litvinov, assistant Commissar for Foreign Affairs, as Chairman of the Soviet delegation, presented for the consideration of the conference a carefully worked out plan for complete disarmament among the nations. This provoked a sharp discussion.

The German and Turkish delegations were the only ones favorable to the Soviet proposals. When the proposals were rejected, Mr. Litvinov presented alternative plans for gradual partial disarmament. These also met with no encouragement from the majority of the delegates. Despite these rebuffs, the Soviet delegates, before departing, expressed confidence that their proposals had released a widespread public discussion of the idea of disarmament, and had thus been a service in the cause of international peace. On August 29, the Presidium of the Central Executive Committee of the Union of Soviet Socialist Republics passed a resolution of adherence to the Kellogg Pact, signed in Paris, August 27.

Soviet business relations with large American industrial units received a decided impetus during the year through the conclusion of a number of commercial and technical contracts. The principal contract was between the International General Electric Company of New York and the Amtorg Trading Corporation, the chief Soviet trading agency in the United States. The agreement provided for purchases of equipment up to \$28,000,000 from the General Electric Company, over a period of six years, on credit terms extending up to five years, and for the establishment of a technical bureau in Moscow by the American firm. Another contract between the Radio Corporation of America and the Soviet Electrical Trust called for exchange of patents and information, with a proviso for technical consultation services in the Soviet Union from the American corporation. Contracts for the sale of Soviet oil products to the Standard Oil Company and the Vacuum Oil Company were continued and extended. Several new contracts with American technical organizations were concluded, and existing agreements with such firms as Hugh L. Cooper & Company of New York, the Freyn Engineering Company of Chicago, and Stuart, James & Cooke of New York were renewed and expanded.

INTERNAL AFFAIRS. Several important developments in internal policy were announced during 1928. Energetic measures were set in motion to cope with the decline in grain exports, which resulted, according to Soviet economists, from sharp increases in per-capita consumption, along with an annual increase of 3,000,000 in the population, rather than any falling off of grain placed on the market. In the old days the export surplus came from the large estates, which have disappeared. The plans adopted were threefold. (1) Provision for better seeds and machinery and for better agricultural methods. (2) Rapid expansion of the coöperative farms, with their higher rate of cultivation, so that they will include 18,000,000 acres by 1933. (3) Development of large State grain-growing areas of 75,000 to 100,000 acres each, with the latest farm methods and machinery, these to cover 15,000,000 acres by 1933. These plans were put under way in the summer of 1928. In the fall 5700 tractors were purchased in the United States to speed up agricultural production.

Another development of importance in 1928 was the extension and liberalization of the policy of granting concessions to foreigners. The new policy included the importation of construction materials duty free and simplification of the taxing scheme. Fields thrown open to the concessionaires included mining, production of machinery, paper pulp, rayon, automobiles, leather, fuel, electric plants, timber, dairying, cotton and sugar growing, building construction, and also public-service concessions in 60 cities. There were 110 foreign concessions in operation at the beginning of 1928. During the year announcement was made of the relinquishment by the W. A. Harriman Company of their manganese concession at Chiaturi, owing to the fact that the drop of 50 per cent in the world price of manganese since the concession was signed in 1925 made further operation unprofitable. The \$3,450,000 invested by the Harriman firm was to be repaid during the next 15 years, with 7 per cent annual interest.

A serious conspiracy to sabotage the coal industry of the Donetz Basin was uncovered in the Soviet Union early in 1928. As a result 53 engineers, including the chief technical director of the mines, were placed on trial charged with entering into a conspiracy with a group of former owners to wreck the Soviet industry. The accused persons included three German engineers, who were acquitted, along with one other defendant. Five convicted conspirators were sentenced to death and others received prison terms. It is interesting to note that the American engineering firm of Stuart, James & Cooke, which was engaged in building new mines in the district, became cognizant of serious misadministration by the beginning of 1928 and gave warning to the higher Soviet authorities several weeks before the first arrests were made.

At the beginning of 1928 Trotzky and other members of the opposition group who had been expelled from the Communist party were ordered to various more or less remote posts in the provinces. During the year many members of this group made up their differences with the party majority and returned to various administrative positions. Trotzky and some of his lieutenants continued to maintain an intransigent attitude.

RUST. See BÖTANY, under *Plant Diseases*; FORESTRY, under *Insects and Diseases*.

RUTGERS UNIVERSITY. A non-sectarian institution of higher learning at New Brunswick, N. J., founded under the name of Queen's College, in 1766. The university consists of the following colleges: Arts and sciences, engineering, agriculture, school of education, college for women. The registration for the autumn term of 1928 was 2440, of whom 1082 were women registered at the Women's College. The 1928 summer session had an enrollment of 1532. Of the 235 members on the faculty, 150 were professors and 85 instructors. The endowment funds amounted to \$3,854,823, and the income for the year, exclusive of the State Agricultural Experiment Station, amounted to \$2,353,880, while lands, buildings, and endowments had a total valuation of more than \$12,000,000. The library contained 172,100 volumes. During the year a music building was erected for the Women's College. President, John M. Thomas, D.D., Litt.D., LL.D.

RYAN, THOMAS FORTUNE. American financier, died at New York, November 23. He was born in Nelson County, Va., Oct. 17, 1851, the son of a small-town tailor. Moving to Baltimore in 1868, he was employed in a dry-goods store, and two years later he went to New York, and entered Wall Street, where in 1874 he bought a seat on the Stock Exchange. Becoming associated with William C. Whitney, he was soon recognized, as a leading influence in many important enterprises, especially street railways and other public utilities. He and his associates financed the consolidation and extension of street-car and lighting systems in New York, Chicago, and elsewhere. He acquired the controlling stock in coal properties in Ohio and West Virginia, and was largely interested in coal and railway companies in Virginia. Mr. Ryan became interested about 1900 in Belgian corporations which were developing mining in the Congo, and was said to be one of the largest individual owners of African diamond fields. In 1912 he made heavy investments in Portuguese Angola. From 1898, he was identified with the American Tobacco Company, and was a controlling factor in the tobacco market in the United States. Mr. Ryan went to England in the summer of 1902, when competition with the Imperial Tobacco Company was becoming acute, and settled the conflict in terms advantageous to the American industry. He was credited with having averted a financial panic in 1905, by securing control of the Equitable Life Assurance Society of the United States and then transferring his 502 shares, for which he had paid \$2,500,000 and which he later sold to J. P. Morgan, to a group of trustees who held the public confidence. When he partially retired in December, 1908, he was officer or director, and principal stockholder in more than thirty corporations, retaining his directorship of the Guaranty Trust Company, the Carolina, Clinchfield & Ohio Railway, and the Clinchfield Coal Corporation.

Mr. Ryan contributed largely to the funds of the Democratic party, and was a delegate from Virginia to the Democratic National Convention in 1904, serving again in 1912. Mr. Ryan gave generously to various charities, especially to the Roman Catholic Church, and in 1912 donated \$1,000,000 for the construction of the Roman Catholic Church of St. Jean Baptiste in New York City. He collected many rare works of art, showing a special interest in Renaissance statuary and painting.

RYE. The production of rye in 1928 by 25 countries reporting to the International Institute of Agriculture, Rome, was placed at 1,674,600,000 bushels as against 1,776,500,000 bushels in 1927, representing a decrease of 5.7 per cent and a slight increase over the average production for the five-year period 1922-1926. The area devoted to the crop in these countries was reported as 104,581,000 acres or 6.5 per cent below the acreage of the preceding year and 7 per cent below the five-year average. The leading rye-growing countries outside the United States reported the following yields: United Socialist Soviet Republics, 783,433,000 bushels; Germany, 303,285,000 bushels; Poland, 232,358,000 bushels; Czechoslovakia, 52,677,000 bushels; France, 35,362,000 bushels; and Hungary, 32,523,000 bushels. Argentina, the leading rye-producing country of South America, produced 6,614,000 bushels

in the crop year 1927-28. The production in Canada in 1928 was estimated at 16,879,000 bushels or 1,928,000 bushels above the crop of 1927.

Estimates based on the reports from 35 States, as published by the U. S. Department of Agriculture, placed the production of the United States in 1928 at 41,766,000 bushels on 3,444,000 acres, or at the rate of 12.1 bushels per acre. In 1927, the yield was 58,164,000 bushels, the area 3,648,000 acres, and the average yield per acre 15.9 bushels. Decreases in acreage and in acre yield accounted for the decline in total production in 1928. The average farm price on Dec. 1, 1928, was 86.4 cents per bushel as compared with 85.3 cents, the corresponding price the year before. Based on the prices, the total value of the crop of 1928 was \$36,067,000, and of the crop of 1927, \$49,609,000. The production in the leading States was as follows: North Dakota, 12,710,000 bushels; Minnesota, 5,950,000 bushels; Nebraska, 3,486,000 bushels; Michigan, 2,366,000 bushels; Wisconsin, 2,171,000 bushels; and Montana, 2,156,000 bushels. The other States producing over 1,000,000 bushels were Pennsylvania, South Dakota, and North Carolina. Due to a reduction of 110,000 acres in acreage and 6.7 bushels in the average yield per acre, the production of North Dakota, as compared with the preceding year, showed a decline of nearly 45 per cent.

The average yield of rye per acre in 1928 was 10 bushels in North Dakota, Georgia, South Dakota, Arkansas, Tennessee, and Utah. The highest average yields per acre, 18 and 18.5 bushels, respectively, were reported for Iowa and New Jersey. The average farm price per bushel on Dec. 1, 1928, varied from 69 cents in Montana to \$1.85 in South Carolina. In nearly half of the States reporting, mostly Eastern and Southern States, this price was more than one dollar.

For the year ended June 30, 1928, the United States exported 26,044,000 bushels of rye and 47,000 barrels of rye flour as compared with 21,613,000 bushels of grain and 14,000 barrels of flour in the preceding fiscal period.

SAAR BASIN. *zür.* According to Article 45 of the Treaty of Versailles, this section of Germany was awarded to France for the purpose of exclusive exploitation of the coal fields, in compensation for the destruction of the coal fields in northern France by the German armies. The treaty provided that for 15 years the Saar Basin should be governed by a commission of five appointed by the League of Nations, and that after that period the population should decide on one of three courses; namely, the administration set up by the treaty, union with France, or union with Germany. Area, 751 square miles; population, about 657,870.

SACRAMENTO VALLEY FLOODS. See FLOODS.

SAFETY, INDUSTRIAL. See NATIONAL SAFETY COUNCIL.

SAFETY AT SEA. For the fiscal year ended June 30, 1928, the U. S. Steamboat Inspection Service of the Department of Commerce reported the following statistics: Total number of accidents resulting in loss of life, 232, or an increase of 21 over the previous year; total number of lives lost from all causes, passengers and crew, 275, an increase of 13 over the previous year. Of

the lives lost, 142 were from suicide, accidental drowning, and other causes beyond the power of the service to prevent, leaving a total of 133 fairly chargeable to accidents, collisions, foundering, etc. The number of lives saved during the year by means of life-saving appliances required by law was 419. The number of passengers carried during the fiscal year on steam vessels that are required by law to report the number of passengers carried was 230,874,907, of whom 81 were lost, making an average of 2,850,807 who were carried for each passenger lost. The total loss in property from such causes as explosion, wreck, or founder, collision between vessels, fire, snags, and miscellaneous causes, amounted to \$10,079,553.

The report of the Supervising Inspector General of the Steamboat Inspection Service showed further that 7118 vessels, with a gross tonnage of 15,386,528, including 6815 domestic vessels with a total gross tonnage of 11,840,138, and 303 foreign passenger steam vessels, with a total gross tonnage of 3,546,390, were inspected during the fiscal year. Of the domestic total inspected, 5302 were steam vessels, 1072 motor vessels, 17 passenger barges, and 424 seagoing barges. The increase in the total gross tonnage of vessels inspected as compared with the previous fiscal year was 73,907, but there was a decrease of 239 in the total number inspected. Additional inspections included 1044 cargo vessels examined to carry persons, besides crew, and 63 hulls of vessels and 2035 boilers for the United States Government. Licenses were issued to 24,773 officers of all grades, certificates of service were issued to 7944 able seamen, and certificates of efficiency to 6721 lifeboat men.

Following is a list of disasters at sea during 1928, many of which resulted in unusually large losses of life:

January 15. The American steamer *City of Pittsburgh*, towing ten empty barges and one loaded fuel barge, collided with the motor ferry vessel, *Hilda*, in the Mississippi River, opposite Norco, La., drowning seven passengers.

January 28-29. During the night the towing steamer, *Baldrock*, with loaded coal barges, *Aranas*, *Catonsville*, and *Nahant*, in tow, became separated from her tow in a heavy gale off Barnegat, N. J., resulting in the foundering of the *Aranas* and *Catonsville*, with a loss of three lives on each of the foundered boats.

February 15. The American tank steamer, *Chukky*, experienced an explosion which broke her in two amidships, resulting in the loss of the lives of 15 members of the crew, about 200 miles off the coast of Japan, the 21 members of the crew who escaped in a life boat being picked up by a Japanese fishing vessel.

April 9. The Canadian Pacific liner, *Montrose*, bound for Liverpool, struck an iceberg three days out of St. John, New Brunswick, resulting in the death of two of the crew and a narrow escape from sinking for the ship.

May 4. The Greek steamer, *Ioannis Fafalios*, sank in collision with the Royal Fleet Auxiliary, *Bacchus*, in the English Channel, and 12 of the crew of 22 were lost at sea or died en route to Portland.

May 7. The United States Army dredge, *Navesink*, was sunk in a collision in New York Harbor, with a loss of 17 lives.

May 31. The steamers, *Kershaw* and *President Garfield*, collided in Vineyard Sound, Mass. The former was sunk and 11 of the crew were lost.

July 7. The Chilean transport, *Angamos*, was totally destroyed when driven on the rocks at Punta Morguillas, south of Lebu, only four of the officers and crew of 215 and 80 Chilean civilians surviving.

July 17. French Indo-China steamer, *Cap Lay*, foundered at the mouth of Songtambo River and 40 lives were lost.

Aug. 6. Italian submarine, *S-14*, collided with a destroyer in the Adriatic Sea during manœuvres, with a loss of 27 lives.

November 12. The liner, *Vestris*, a British-owned vessel, en route from New York to Barbados, Rio de

Janeiro, and Buenos Aires, sank off Virginia Capes following a hurricane which damaged the boat. The official list of survivors reported 60 passengers and 151 of the crew saved, leaving 115, including 69 passengers and 46 of the crew, unaccounted for. Survivors were brought to New York by the steamships, *American*, *Shipper*, and *Berlin*, and the tanker, *Myriam*.

November 15. The British lifeboat, *Mary Stanford*, of Rye, England, capsized in a raging sea a mile from shore after putting out to sea in answer to a call from the *Alice*, of Riga, in distress off Dungeness. Seventeen of the crew were drowned.

December 10. The White Star liner, *Celtic*, grounded on a reef at the entrance to Cork Harbor early in the morning. All of the passengers, approximately 250, including 25 of the *Vestris* crew, and the mail were landed safely at Queenstown. The vessel suffered a heavy loss.

SAID MOHAMMED PASHA. Egyptian statesman, died July 21. His first public office was that of minister of the interior under Boutros Pasha Ghali in 1908, and when his chief was murdered in 1910 he became premier. He worked in harmony with the British Consul General and agent in Egypt, Lord Kitchener, but a dispute with the Khedive, Abbas Hilmi Pasha, resulted in his resignation in April, 1914. In the troublous times of 1919, Said Pasha formed a non-political ministry and in the same year had a narrow escape from assassination. He resigned in November, 1919, but went into office again in 1924 as minister of education in the Zaghlul Government. Shortly afterward he accepted the portfolio of minister of justice, and was acting premier during Zaghlul's visit to Europe. He resigned in October, 1924, and in January, 1925, gave up his membership of the Wafd, as he opposed Zaghlul. He was later elected an independent member for Alexandria.

ST. CHRISTOPHER or ST. KITTS. See LEEWARD ISLANDS.

ST. FRANCIS DAM DISASTER. See DAMS; and CALIFORNIA under *History*.

ST. HELENA. An island of volcanic origin in the South Atlantic, about 1200 miles from the west coast of Africa, and belonging to Great Britain. Area, 47 square miles; population, according to the census of 1921, 3747; estimated civil population, Dec. 31, 1926, 3728. Capital and seaport, Jamestown. The chief occupation is the fibre industry, and fibre and tow are the principal exports. In 1926 the exports were valued at £39,977 and the imports at £56,040; revenue £23,944, expenditure, £23,154; there is no public debt. A detachment of the Royal Marine Artillery is stationed on the island, which is also a coaling station for the British Navy. Governor in 1928, C. H. Harper.

ST. JOHN'S COLLEGE. A college of liberal arts and sciences for men at Annapolis, Md., founded as King William's School in 1696. The enrollment for the autumn term of 1928 was 266, and there were 27 members on the faculty. The College grants the A.B. degree only. Freshmen are given orientation courses in literature and the social sciences. The endowment funds amounted to \$184,659, and the yearly income to \$198,594. The library contained 18,212 volumes. President, Enoch B. Garey, LL.D.

ST. LAWRENCE UNIVERSITY. An institution for the higher education of men and women at Canton, N. Y., founded in 1856. The registration for the autumn term of 1928 was 4170, distributed as follows: College of letters and science, 830; theological school, 28; law school, 3312. The faculty numbered 124, divided among the several schools as follows: Letters and science, 48, of whom 6 were additions during the

year; theological, 4; law, 40; special lecturers, 8. The endowment funds amounted to \$2,316,520, and the income for the year to \$162,133. The library contained 52,600 volumes. During the year, Richardson Hall was erected in Brooklyn for the law school, and a gift of \$100,000 was received from S. L. Carlisle & Co., of New York City, to be payable at the rate of \$20,000 annually, and to be used by the university to promote the teaching of forestry. President, Richard Eddy Sykes, D.D.

ST. LOUIS. See MISSOURI.

ST. LUCIA, 160°shf-a. A British insular colony in the Windward group of the West Indies. Area, 233 square miles; population in 1926, 55,698. Castries, the chief port and capital, is a naval base and coaling station. The movement of population in 1926 was: Births, 2120; deaths, 1230; marriages, 255. On Dec. 31, 1926, there were 42 Roman Catholic and 7 Protestant schools, with 8564 pupils enrolled. The chief products are cacao, sugar, lime juice, lime oil, bay oil, honey, hides, logwood, rum, fuel, molasses, and syrup. Imports in 1926 were valued at £252,236; exports, at £251,705. Of the imports the largest share came from the United States and of the exports the largest share went to Great Britain. The total shipping in the same year was 1,071,957 tons, of which 848,997 tons were British. Revenue in 1926, £83,379; expenditure, £84,488; public debt, £206,600. The island is under an administrator aided by a nominated executive and a party nominated and partly elected Legislative Council.

ST. PAUL. See MINNESOTA.

ST. PIERRE AND MIQUELON, mē-ke-lôn'. Two small groups of islands belonging to France, close to the southern coast of Newfoundland, and named from their two largest islands. Area of the St. Pierre group, 10 square miles; population in 1921, 3419; area of the Miquelon group, 83 square miles; population in 1921, 499. The islands are rocky and unsuited to agriculture, their main importance being as a centre for the cod-fishing industry. The chief town is St. Pierre, which has regular steamship communication with North Sydney and Halifax. In 1924 the imports totaled 149,075,355 francs; the exports, 142,804,699 francs. The imports consisted chiefly of textiles, salt, wines, foodstuffs, and meat; the exports, cod, dried and fresh, and fish products. The local budget for 1927 was: Revenue, 8,985,250 francs; expenditure, 8,983,469 francs. The islands are under a governor aided by consultative and municipal councils.

ST. THOMAS. See SAO THOME AND PRINCIPE.

ST. VINCENT. A British insular colony in the Windward group of the West Indies. Area, 150.3 square miles; population 1926, 49,751. Kingstown, with a population of 3836 in 1921, is the capital. The movement of population in 1926 was: Births, 1963; deaths, 966; marriages, 153. In the same year there were 28 primary schools with an average attendance of 2892. The chief products are arrowroot, sugar, cotton, rum, cacao, and spice; cotton (Sea Island) being especially important and regarded as the best grown in the British Empire. In 1926 the imports were valued at £203,606; exports, £162,909; revenue, £60,243; expenditure, £59,282; public debt, £9730; total shipping, 416,136 tons. One-half of the Grenadine Islands are under the administration of the island of St. Vincent and the other half under Grenada (see GRENADA). At the head of the administration is an admin-

istrator and colonial secretary, who is aided by a legislative council consisting of official, elected, and nominated members. Administrator in 1928, R. Walter.

SAKHALIN, sā'kă-lyên'. An island off the eastern coast of Siberia, separated from Japan by the narrow Strait of Soya. The portion south of the 50th parallel of N. latitude belongs to Japan; north of that line lies the Province of Sakhalin, belonging to Russia. Japanese Sakhalin or Karafuto (see KARAFUTO), has an area of about 13,934 square miles and a population, according to the census of 1925, of 203,504. The area of the Russian province is 14,688 square miles, with a population estimated at 34,000 in 1915. The northern half is covered with forests to the extent of 80 per cent of the entire area.

SALOMON COLLECTION. See ART SALES.

SALVADOR, sā'l'vā-dōr'. A Central American republic situated to the east of Guatemala on the Pacific coast. Capital, San Salvador.

AREA, POPULATION, ETC. The area is estimated at 13,176 square miles; the population on Jan. 1, 1927, was estimated 1,657,000. The mestizos or mixed races numbered 1,307,200 and the Indians 326,800. San Salvador has a population of 87,000. Other large towns with their populations at the same time were: Santa Ana, 74,200; San Miguel, 37,000; Santa Tecla, 28,000; San Vicente, 33,000; and Sonsonate, 16,283. In 1926 there were 60,391 births and 37,405 deaths.

EDUCATION. Education is free and obligatory from 7 to 14 years of age. During the 1927 school year there were 1557 primary teachers in 859 government schools, while the number of pupils registered was 47,467. The National Conservatory of Music, the Theatrical School, and the National School for the Blind were established. The registration in the Conservatory was 273 pupils and in the Theatrical School 28. There were 18 private schools and 6 commercial schools of secondary rank. In the National Institute, where 275 students were entered, the first experiment in coeducation was successfully carried on.

PRODUCTION, ETC. Salvador is chiefly an agricultural country. The fertile soil of the mountain slopes is excellently adapted to the cultivation of coffee. This commodity is the basic money crop of the Republic and it normally accounts for approximately 90 per cent of the total exports. It was estimated that the 1927-28 crop was unusually large, amounting to well over 800,000 bags. Sugar is the second most valuable export crop, although amounting to less than \$1,000,000. The cultivation of henequen is of comparatively recent introduction into Salvador and, while it is only one of the secondary crops, its acreage was being steadily extended. Cotton, which reached its highest production in 1925, was no longer cultivated to any extent and was unimportant as an economic factor. Exports decreased from 535,635 kilos in 1926 to 49,665 in 1927. Among the other agricultural crops are balsam, indigo, tobacco, and rubber. The most important native crops are corn, beans, and rice.

Gold and silver are found in commercial quantities, but their production is seriously hampered by lack of fuel. Salvador is so dominated by agriculture that little attention has been given to manufacturing. The principal manufacturing industries cater exclusively to local requirements. They consist chiefly of the making of soap, candles, shoes, leather goods, textiles, and other small local necessities.

COMMERCE. The total value of Salvador's exports in 1927 amounted to \$14,100,000, as compared with \$24,600,000 in 1926, a decrease of \$10,500,000, or 42 per cent. This figure is the exact difference in the values of the 1926 and 1927 coffee exports, which totaled \$23,000,000 and \$12,500,000, respectively. The decreased cotton production is reflected in the exports, which declined from \$172,744 in 1926 to \$17,575 in 1927. Sugar exports amounted to \$994,016 in 1927, as against \$763,375 in 1926, an increase of \$230,641, or 23 per cent. Henequen exports during 1927 amounted to \$144,143, as against \$54,562 in 1926. Exports of balsam amounted to \$111,226 in 1927, as against \$119,531 in 1926. Other products of comparatively little importance as exports are indigo, hides and skins, straw hats, honey, and hardwoods, the total export value of which amounted to approximately \$50,000 during 1927. Total exports from Salvador to the United States during 1927 amounted to \$1,564,859, as compared with \$4,561,531 for 1926, a decrease of \$2,996,672. This decline is attributable almost entirely to the small coffee purchases, which amounted to \$1,014,392 in 1927, as against \$3,885,517 in 1926.

Total imports into Salvador amounted to \$14,785,000 in 1927, as compared with \$26,035,000 in 1926, a decrease of 43 per cent. Imports from the United States decreased 56 per cent; from Germany, 38 per cent; from France, 41 per cent; and those from Great Britain increased 6 per cent. The leading imports are cotton manufactures, machinery, hardware, foodstuffs, and pharmaceutical supplies.

FINANCE. Revenues and expenditures of Salvador during 1927 amounted to 20,514,492 and 21,799,527 colones, respectively—a deficit of 1,285,035 colones for the year—according to the President's message to the National Assembly. These totals compare with receipts and expenditures during 1926 of 22,314,798 and 21,922,930 colones, respectively, resulting in a surplus of 391,868 colones. The budget law for 1928-29 as passed by the National Assembly in 1928 provided for receipts of 23,132,000 colones and expenditures of 23,202,486 colones. Of the receipts, the export and import taxes were expected to provide 13,996,000 colones and internal revenue and taxes, 9,136,000 colones. The largest item of expenditure was service on the public debt which amounted to 7,000,000 colones.

COMMUNICATIONS. There are three railway companies operating in the country. The principal line, the International Railways of Central America, operates over a total of 441 kilometers, from the port of La Union, on Fonseca Bay, to the capital, San Salvador; thence northwest to the Guatemalan frontier, where it will eventually connect with the Guatemalan section of the line to Puerto Barrios (see GUATEMALA). The Salvador Railway Co. has a line extending from San Salvador to the port of Acajutla in the western part of the Republic and a branch to Santa Ana from Sitio del Nino, a total distance of 152 kilometers. The San Salvador and Santa Tecla Railway operates 60 kilometers between the cities named. In 1926, 658 steamers entered at the ports of the Republic, with a tonnage of 1,405,000.

GOVERNMENT. Under the constitution, executive power is vested in the President elected for four years, who acts through a ministry of four members; and legislative power in the Congress of

42 members elected for one year by universal suffrage. President in 1928, Dr. Pio Romero Bosque (1927-31); Vice President, Gustavo Vides.

SALVATION ARMY. An international organization with headquarters in London, whose sole purpose is the "salvation of mankind from all forms of spiritual, moral, and temporal distress." The movement was first organized as a mission in the East End of London in 1865 by William Booth, a minister of the English "New Connection Methodists." It spread rapidly throughout England and in 1880, as the Salvation Army, was extended to the United States. Incorporation took place in New York in 1899.

The organization of its government is military in character, and in 1928 it was under the command of General Bramwell Booth, eldest son of the founder, with the international headquarters in London. The higher command is divided into territories, each territory generally being a separate country or colony, with its own organization under the direction of a commissioner, each local corps or post being under the command of a captain and a lieutenant. The United States is divided into four territories, with headquarters in New York, Chicago, San Francisco, and Atlanta, the last named having been organized during 1926.

Internationally, the outstanding events of the Salvation Army during 1928 were the stone-laying ceremony of the International Training College for officers located in Denmark Hall, South London; (when completed it will have cost \$5,000,000); better provision for the care of 30,000 war graves in Europe supervised by Salvation Army officers; the unveiling of the Mile End Memorial, London, to the founder, William Booth; the opening of Dutch Guiana; the relief expenditures for, and of the suffering in, Telegu, India; and the Thames flood.

In the United States, 85 new buildings were added during the year 1928; a new Training College for the Western territory was opened by Commander Evangeline Booth at San Francisco; and a turning-of-the-sod ceremony performed by her at 120 West 14th Street, New York City,—the old national headquarters—where were being erected new administrative buildings with a large auditorium and a home-like residence for 400 business girls, at an aggregate cost of \$2,500,000. The most significant event, however, was the departure of Commander Evangeline Booth, with six other delegates, to attend the first high council held in the history of the Army in London, England. Sixty-four territorial leaders from all parts of the world convened for the purpose of electing a new general consequent upon the alleged unfitness of General Bramwell Booth through failing health to continue the performance of his duties.

In 1928 there were in the services of the Salvation Army, throughout the world, 26,000 officers and cadets; 10,000 persons without rank wholly employed; 152,958 local officers and bandsmen; 62,265 songsters; 35,109 corps cadets; and 16,518 corps and outposts in operation. The Salvation Army conducted 1630 social institutions and agencies; 1816 day schools; and 31 naval and military homes. Other institutions included 149 hotels for men, and 53 hotels for women, accommodating 35,433 persons; five inebriates' homes with 199 patients; 100 homes housing 5080 children; 10 crèches; 24 industrial schools with 1570 pupils; 112 women's industrial

homes, accommodating 3622 women; and 79 maternity homes with 2801 patients. The Army also maintained 309 similar institutions as well as 12 farms; 176 slum posts; 210 homes, elevators, workshops, and woodyards, accommodating 7341 persons. In addition to 17 separate food depots, there were 123 combined shelters and food depots for men, and 18 for women. Through the 140 labor bureaus, 456,668 men were supplied with work. The organization published 123 periodicals, with an average circulation of 2,100,000 copies per issue. The Salvation Army is active in 86 countries and colonies, and its gospel is preached in 70 languages.

The national headquarters of the Army is at 122 West 14th Street, New York, and Commander Evangeline Booth, daughter of the founder, General William Booth, is the national leader. The American territorial commissioners for 1928 were: Richard E. Holz (Eastern), John McMillan (Central), Adam Gifford (Western), and William McIntyre (Southern).

SAMARIA. See **ARCHAEOLOGY.**

SAMOA. A group of 14 islands in the Pacific Ocean, between 13° and 15° S. latitude and 168° and 173° W. longitude, about 2000 miles south of Hawaii and 4000 miles southwest of San Francisco. Since Feb. 13, 1900, the islands east of 171° W. longitude have belonged to the United States; and the islands west of that line belonged to Germany until the outbreak of the War in 1914, when they were occupied by the British and later turned over to New Zealand for administration, under a mandate of the League of Nations.

The official name applied to the former German Samoan Islands is Western Samoa. This territory includes Savaii and Upolu, two of the largest islands, and Apolima and Manono. Area of Savaii, about 660 square miles; Upolu, 550 to 600 square miles. The principal port is Apia, on the island of Upolu. Population, Dec. 31, 1926, 41,660, of whom 2555 were Europeans and half-castes, and 947 coolie laborers. About 11,400 pupils are instructed in schools conducted by the Government and various missionary groups. The products include copra (the chief product), cacao, rubber, sugar, and cardamoms. The imports for 1926 were valued at \$324,940; exports \$320,785. The principal source of imports was Australia and the chief destination of exports was Great Britain. In the same year 84 vessels of 93,441 tons entered and cleared at the port of Apia. The revenue collected for the year ended Mar. 31, 1927, was £133,813; expenditure, £141,710. The general control of the islands is under the New Zealand ministry, and the local government is under an administrator. Administrator in 1928, Maj. Gen. Sir George Richardson.

Tutuila, Tau, and the Manua group comprise the American Samoan group of islands. The total area of the islands is about 60 square miles; and the population, according to the census of 1926, is 8763. The principal port is Pago-Pago, at the extreme end of the bay of the same name on the island of Tutuila, the best and safest harbor in the South Seas. The soil is very fertile. There is an abundance of copra, which is the only article exported, and a variety of fruits, including oranges, limes, bananas, mangoes, and alligator pears. The United States Navy has established a high-powered radio station on the island of Tutuila, which is in daily communication with the islands of the Pacific and the United States. The Government is in the hands of the Governor of

the United States Naval Station at Pago-Pago. The islands are divided into three general administrative districts, corresponding to the former political divisions of Samoa, each administered by a native governor who is appointed by the governor of all the islands. At the head of each village is a chief, elected annually, subject to the governor's approval. Governor in 1928, Capt. E. S. Kellogg, U. S. N.

During the year there were published various accounts of general unrest in the Samoan Islands under the mandate of New Zealand. For years there had been agitation in the islands under the leadership of the Samoan League, called the Mau, which resented the slight participation of the native chiefs in the administration of affairs. Other sources of complaint were the enforcement of liquor prohibition and the regulation of the copra trade. Needless to say, the New Zealand authorities declared that all rules and regulations were carried out for the benefit of the natives. Native opposition took the form of armed meetings and boycotting of New Zealand officials and citizens in general. The situation became so serious that in February the New Zealand Government dispatched warships to the islands and arrested Tamasese, the King of the natives. His arrest which did not take place until November, and which was followed up by deportation and jail sentence in New Zealand, appeared to have successfully broken the back of the Mau movement, inasmuch as no other chief appeared willing to take his place and face the threat of arrest and deportation.

SAMOS. An island in the Aegean Sea, belonging to Greece. Area, about 181 square miles; population, according to the census of 1920 and that of the refugees made in 1923, 80,194. Capital, Vathy, with a population of 12,472. The island was acquired from Turkey as a result of the Balkan War of 1912-13.

SAN DIEGO MUSEUM. See **ART MUSEUMS.**
SAN FRANCISCO WATER SUPPLY. See **MUNICIPAL OWNERSHIP.**

SAN GABRIEL DAM. See **DAMS.**

SANITATION. See **GARBAGE AND REFUSE DISPOSAL; SEWERAGE AND SEWAGE TREATMENT; TYPHOID FEVER; WATERWORKS; WATER PURIFICATION.**

SAN MARINO, mā-rē'nō. A republic of Europe, located in the peninsula of Italy. Area, 38 square miles; population, in December, 1925, 12,952. The chief exports are wine, cattle, and the building stone quarried on Mount Titano. The revenue and expenditure for 1926-27 balanced at 4,145,179 lire. There is no public debt. Politically and economically San Marino is closely allied with Italy.

SANTO DOMINGO. See **DOMINICAN REPUBLIC.**

SÃO THOMÉ, soun tō-mā', AND PRINCIPE, prēny thē-pā. Two islands in the Gulf of Guinea, about 125 miles from the coast of Africa, and belonging to Portugal. Area, 360 square miles; population, according to latest available statistics, 52,150 for São Thomé and 6905 for Principe. The islands are hilly, with volcanic soil, but the land is fertile and the products are varied. Cacao, cinchona, coffee, and rubber are the chief exports. The revenue and expenditure for 1926-27 balanced at 10,573,347 escudos. Imports for 1927 were 36,271,746 escudos, and exports 91,776,486 escudos.

SAP MOVEMENT IN TREES. See **BOTANY.**

SARAWAK, sā-ril'wāk. An independent state, comprising the northwestern part of the island of Borneo, under the protection of Great Britain. Area, about 42,000 square miles (coast line 400 miles). Population estimated at about 600,000, made up of Malays, Dyaks, Kayans, other Polynesian tribes, Chinese, etc. Kuching is the capital, with a population of about 25,000. There are large resources of coal, and recently an oil field has been opened up in the Baram region. The chief exports are petroleum products, plantation rubber, and sago flour. The administration of the region was acquired by Sir James Brooke in 1842 from the Sultan of Brunei; it was governed by him under British protection. On his death in 1917 he was succeeded by his son, Sir Charles Vyner Brooke, who is the present rajah. British supervision is exercised by the British agent for Sarawak and British North Borneo.

SARWAT, ABDEL KHALEK PASHA. Egyptian statesman, died at Paris, September 22. He was born at Cairo, Egypt, 1873. He distinguished himself at the study of law, receiving a number of important appointments shortly after the completion of his course. He was made Governor of Assiut, an influential province of Lower Egypt, in 1908, being given the grade of Pasha at the same time. He was appointed Procureur-General of the native courts the following year, a position previously held by Europeans. When the British protectorate was established in 1914 the Prime Minister of Egypt, Rushdi Pasha, made him Minister of Justice, and both men, being nationalists, resigned in 1919 when they could not negotiate with Great Britain for Egyptian independence. Sarwat was appointed Minister of the Interior in Adly Pasha's cabinet two years later, taking the Prime Minister's place while he was treating unsuccessfully with Lord Curzon in England. Adly resigned at the end of the year, leaving Sarwat and Sidky Pasha to manage a disrupted government. With the aid of Lord Allenby, Sarwat secured the Declaration of 1922, whereby the British Government recognized the sovereignty of Egypt. Sarwat was made Prime Minister, Mar. 21, 1922, but his office was hampered by Zaghlul Pasha, who opposed various reservations embodied in the British Declaration. Sarwat resigned in November, after a disagreement with King Fuad, who had attempted to overstep his new constitutional powers. Adly, having again become Prime Minister by June 1926, appointed Sarwat Minister for Foreign Affairs, giving place to him in April, 1927, when the Wafdist opposition forced him to resign his position at the head of the Government. Sarwat and Zaghlul had become reconciled, and the new administration was firmly national. Negotiations for an alliance with England were interrupted by the death of Zaghlul, and when they were completed, Mar. 1, 1928, the Wafds refused to ratify the treaty, believing that it did not sufficiently guarantee Egyptian independence, mainly because it allowed the continuation of British military occupation for ten years, when the question should be submitted to the League of Nations. Sarwat resigned March 4, and was succeeded by Nahas Pasha.

SASKATCHEWAN. A prairie province of Canada, situated between Alberta on the west and Manitoba on the east, extending northward from Montana and North Dakota to the Northwest Territories. Area, 251,700 square miles; population, according to the census of 1926, 821,-

042, a gain of 63,532 over 1921. Capital, Regina, with a population in 1926, of 37,329. Other cities are Saskatoon, 31,234, a gain of 25 per cent over 1921; Moosejaw, 19,039; Prince Albert, 7873. Of the total population in 1921, 538,552 were living in rural communities. In 1926 there were 189,034 pupils and 7494 teachers in the 4721 public elementary schools, and 17,526 pupils in the secondary schools. The total area under cultivation in 1926 was 20,419,175 acres, and the value of agricultural products was \$320,922,000. The acreage and estimated yield of the principal crops in 1927 was as follows: Wheat, 12,979,279 acres, 208,966,000 bushels; oats, 4,412,556 acres, 144,732,000 bushels; barley, 925,889 acres, 26,295,000 bushels; rye, 358,215 acres, 7,905,000 bushels; flax, 330,675 acres, 3,208,000 bushels; mixed grains, 31,000 acres, 968,000 bushels; other grains, 2623 acres, 39,000 bushels; potatoes, 44,823 acres, 3,030,000 cwt.; roots, 3387 acres, 295,000 cwt.; hay and clover, 407,328 acres, 570,000 tons; fodder corn, 33,073 acres, 96,000 tons. Total exports in 1925-26 amounted to \$10,169,324; total imports \$14,898,870. In 1926 there were 7237 miles of steam railway in operation. The government is under a lieutenant-governor appointed by the Governor-General of the Dominion of Canada, and a legislative assembly of 63 members elected for five years by universal suffrage. Women not only have the right to vote but are eligible for seats in the legislature. Lieutenant-governor, H. W. Newlands; premier and treasurer, J. C. Gardiner; Railways, G. Spence; Education, S. J. Latta; Agriculture, C. M. Hamilton; Attorney-General, T. C. Davis; Public Works and Health, J. M. Uhrich; Highways and Telephones, W. J. Patterson; Secretary, Municipal Affairs, Labor and Industries, T. C. Davis.

SAULT STE. MARIE, CANALS AT. In 1928, the 19,286 vessels passing through the United States and the Canadian canals at Sault Ste. Marie, Michigan and Ontario, had a total registered tonnage of 66,835,763, as compared with 18,759 vessels of 64,325,362 tonnage in 1927. The average daily tonnage passing the canals during 1928 was 378,230 tons. The largest single cargo carried was 16,650 tons, which was also the maximum single cargo on record. The number of individual registered vessels using the canal during the 1928 season was 739, which, with the total number of passages at 18,286, made an average of 84 vessels per day.

Through the United States canal, there were 15,928 vessel passages with a registered tonnage of 62,251,697, and through the Canadian canal, 3358 vessel passages with a registered tonnage of 4,584,066. The number of passengers through the canals showed an increase over 1927, the totals for 1927 and 1928 being 55,115 and 56,053, respectively. The total freight passing through the canals aggregated 86,992,997 short tons, or an increase of 3,638,933 tons. Of the total freight tonnage, 70,165,901 tons were east-bound and 16,827,096 were west-bound. The leading items of east-bound freight carried through the United States canal were iron ore, 53,191,726 short tons; wheat 389,368,486 bushels; grain, other than wheat, 115,461,882 bushels, which together with the tonnage carried through the Canadian canal, brought the totals up to 53,225,102 tons, 406,759,712 bushels, and 131,039,303 bushels, respectively, all of which were in excess of 1927 totals for these items carried through the canals. The east-bound lumber car-

ried through the United States canal amounted to 171,568 M. feet B. M.; that through the Canadian canal to 15,637, bringing the total up to 187,205 M. feet B. M.; 4,864,808 barrels of flour were carried through the United States canal, and 4,418,130 through the Canadian canal, bringing the total up to 9,282,938 barrels. Among the leading articles of west-bound traffic was soft coal, 14,043,589 short tons, a decrease over the previous year, when the total was 15,953,959 short tons. Of the 1928 total, 14,017,648 tons were carried through the United States canal and 25,941 tons through the Canadian canal. The total tonnage of hard coal was 826,318, of which 778,785 tons went through the United States, and 47,533 tons through the Canadian canal. These items were followed by 731,674 short tons of general merchandise, of which 360,252 tons were carried via the United States canal and 371,422 tons via the Canadian canal; stone, 561,325 short tons, divided between the American and Canadian canals as follows: 557,945 and 3380 short tons, respectively; and oil, 321,098 short tons, most of which was carried via the United States canal. The United States canal was in commission 227 days and the Canadian canal, 230 days.

SAVINGS BANKS. See **BANKS AND BANKING.**

SAXONY. The name Saxony is applied to three divisions of the former German Empire; the Republic of Saxony (formerly the Kingdom of Saxony); the former Grand Duchy of Saxony (now a part of Thuringia); and the Province of Saxony in Prussia.

REPUBLIC OF SAXONY. The third largest State of the German Republic: proclaimed a republic on Nov. 9, 1918. Area, 5787 square miles; population, according to the census of 1925, 4,992,320. The capital, Dresden, had a population in 1925 of 619,157. The largest city is Leipzig, with a population of 679,159. The other cities with over 100,000 in 1925 were Chemnitz, 333,851, and Plauen, 111,436. In 1926 the movement of population was: Births, 88,381; deaths, 52,856; marriages, 38,772. On May 1, 1927, there were 2129 public elementary schools with 15,800 teachers and 507,234 pupils. In proportion to its size, Saxony is the leading State in German industry, and rivals the chief industrial provinces of Prussia. In 1925 the area under cultivation was 2,373,218 acres. The area under the principal crops with their yields in metric tons in 1927 was: Wheat, 209,926 acres, 215,758 tons; rye, 433,927 acres, 364,699 tons; barley, 77,988 acres, 76,958 tons; oats, 392,050 acres, 385,452 tons; potatoes, 264,584 acres, 1,878,520 tons; meadow, 448,299 acres, 922,799 tons of hay. The livestock census taken at the end of the same year showed 168,769 horses, 693,097 cattle, 705,405 pigs, 200,635 goats, and 71,563 sheep. The chief industry is textile manufacturing, but mining and metal-working are also of importance. In 1926, 4,147,160 tons of coal and 10,053,534 tons of lignite were produced, the combined value being 107,068,000 gold marks. The ordinary budget for 1927-28 balanced at £18,653,914 and the extraordinary budget at £2,514,456. The constitution of the Republic is dated Oct. 26, 1920. The Diet was elected on Oct. 31, 1926, and is composed of the following parties: German Social Democratic party, 31; Saxon Social Democrats, 4; Democrats, 5; German National party, 14; People's party, 12; Communists, 14; Middle Class party, 10; others, 6. Prime Minister in 1928,

appointed in February, 1924, reelected Jan. 11, 1927), Herr Heldt, of the Socialist party.

SCABIES, ERADICATION OF. See **VETERINARY MEDICINE.**

SCALE. See **ENTOMOLOGY, ECONOMIC.**

SCANDINAVIAN LANGUAGES AND LITERATURES. See **PHILOLOGY, MODERN.**

SCANDINAVIAN LITERATURE. This review includes the late books of 1927 in addition to the books of 1928, and is divided into the Danish, Norwegian, and Swedish literature.

DANISH. *Drama.* *Skenk mig Fjender* (Give Me Enemies), by Johannes Buchholtz is the story of a man, who, unwilling to enjoy happiness without fighting for it, challenges Fate to send him enemies. In *De uridende* (The Ignorant), Max Lobdanz deals with an Ibsenian problem, the conflict between science and conscience. Two plays go back to the time of Christ—Kai Munck's *En Idealist* (An Idealist), which treats Herod's life and death somewhat in the manner of Hebbel, and Einar Christiansen's *De spurgte ham* (They Asked Him), which has a broad world historic background and makes us feel the new world spirit manifesting itself at the coming of Christ. Johannes Heskjær's *Dr. Hansen*, like his *Kristine* of last year, shows strong dramatic power.

Poetry. Marinus Børup's *Regnbuen* (The Rainbow) which is largely love poems, strikes a note of genuineness and real sentiment. Other collections worthy of notice are Hans Hartvig Seedorf-Pedersen's *I Dagningen* (At Dawn), in which the lyric poems are the best, and Jeppe Aakjær's *Aftenstjernen* (The Evening Star).

Fiction. Sophus Clausen's *Fortællingen om Rosen* (The Story of the Rose) is of interest not so much for its action as for the discussions concerning art and literature that it contains. The scene is laid in Paris, and the story is permeated with the atmosphere of the Latin quarter. Otto Rung's three volumes of short stories, *Tyre og Røvere* (Thieves and Robbers), *Retters Sværd* (The Sword of Justice), and *Livet farligt* (Dangerous life) all show interest in the exceptional and extraordinary.

Memoirs and Literature. In *Erindringer* (Reminiscences) Harald Høffding gives an interesting account of his experiences as a professor of philosophy and of the development of his works. Svend Leopold's *Erindringer fra min Ungdom* (Reminiscences from My Youth) is of special interest because of the literary characters described in it. Nils Hoffmeyer gives a good picture of the Eternal City and its Scandinavian visitors in *Romereske Dage* (Days in Rome). In *Danmarks fornviser* (Denmark's Old Folk Songs) Ernst von der Recke endeavors to discover the original forms of the old *viser*.

NORWEGIAN. *Theatre.* In view of the centenary of Ibsen's birth, several of his plays were produced in the theatres of Oslo.

Poetry. Some of the poems of Olaf Bull's *Metope* are among the best ever written in the Norwegian language. Although Nils Collett Vogt's *Vind og bølge* (Breeze and Billow) gives expression to widely varying moods, it shows in general a more sombre outlook on life than his earlier poems. *Berget det blaa* (Blue Mountain) comes nearer to artistic perfection than any of the other works of Arnulf Øverland.

Fiction. In *Skibe i drift* (Drifting Ships) Kristian Elster shows a pessimistic view of the official and wealthy classes. Katharina Gjesdahl's

Toves mand (Tove's Husband) is the story of a mésalliance. In *Hyrden* (The Shepherd), a sequel of *Svend Morgendug*, Gabriel Scott attempts to solve the problem of divine justice. *Syndere i sommersol* (Sinners in the Summer's Sun), by Sigurd Hoel gives the story of an interesting but unsuccessful experiment. A group of young people go to the sea shore for a vacation and agree not to be drawn into the ordinary love affairs with the accompanying jealousies and quarrels. Sigrid Undset, who received the Nobel Prize for literature this year, added another section to the story of Audunssøn, *Olav Audunssøn og hans børn* (Olav Audunssøn and his Children). Like so many of Undset's heroes, Olav struggles constantly to find peace within himself. O. E. Rölvaag's *Peder Seier* (Peder Victorious), a sequel to *Riket grundlægges*, deals with the second generation of Norwegians in America. Like Rölvaag's earlier books it was received with enthusiasm.

Literature, etc. In his *Henrik Ibsen*, Halvdan Koht stresses the fact that Ibsen was above all not a philosopher nor a thinker but a poet. *Tegn og gjærninger* (Signs and Deeds) by Ronald Fangen is a collection of interesting essays dealing with different subjects such as political theory, literature, evolution, etc.

SWEDISH. *Poetry.* *Slöjan* (The Veil) has a simpler style than the earlier poems of Bertil Malmberg and a more direct human appeal. Artur Lundqvist made his début with *Glöd* (Glowing Embers), a collection of free verse, highly expressionistic. Two collections by Swedish poets in Finland deserve mention: Hjalmar Procopé's posthumous volume *Eget och andras* (My Own and Others'), and Barbro Mörne's *Bild och syn* (Image and Vision), which received a prize given by the Finnish Government. Other volumes worthy of mention are Sigurd Elmblad's *Dröm och längtan* (Dream and Yearning), and Ragnar Jändel's *Kämpande tro* (Struggling Faith).

Fiction. In *Förbrytare* (Criminals) Rudolf Värnlund undertakes to show how difficult it is to judge men, to unravel the multitude of purposes and motives which influence their actions, to distinguish the criminals from the non-criminals. He does this without preaching and in a fascinating manner. The last chapter is a masterpiece. The greater part of Sigfrid Siwertz's *Jonas och Draken* (Jonas and the Dragon) takes place during the Great War. It gives an excellent picture of the feverish unrest which during that period pervaded even the neutral countries of Europe. Through his hero, the author makes us feel closely acquainted with two widely different spheres, the university circle and the newspaper world. *Lotten Brenners ferier* (Lotten Brenner's Vacation), which, like many of Hjalmar Bergman's stories, is extraordinary and fantastic, shows the change effected in a scholarly and unemotional woman—a Ph.D. and university lecturer—by the exchange of the lecture room for the sea shore. In *Den kloka Elsa* (The Wise Elsa), Anna Lenah Elgström depicts in a touching and sympathetic manner the emotions and the experiences of a growing girl. Eyvind Johnson's *Minnas* (Remembering) shows in a convincing and realistic way the hold that thought and memory have on human life. With her usual faithful portrayal of a cross-section of Värmland life, Selma Lagerlöf added another chapter to the history of the Löwensköld family in *Anna Svärd*. Among collections of short stories may be

mentioned Gertrud Lilja's *Människor* (Human Beings), and Elin Wägner's *Den odödliga gärningen* (Immortal Deed).

Miscellaneous. In *Fantasier* (Imagination), Olle Holmberg discusses dreams and day dreams and their relation to poetry. Einar Tegen wrote a collection of essays, *I filosofiska frågor* (Problems of Philosophy).

SCARLET FEVER. THE SERUM TREATMENT. The status of this subject did not change materially during the year 1928. The literature had become very large and reports published seemed favorable. The theory rather than the practice of the serum treatment was under criticism, for there was still denial that the hemolytic streptococcus was the true cause of the disease and that the antitoxin was a true antidote. At last accounts it had been found that the hoped for results from the diagnostic skin test followed by preventive inoculation had not materialized, but whether this was a temporary setback or a permanent failure did not appear. Startling therapeutic results are occasionally seen in the infectious febrile diseases from injections of non-specific protein substances of various kinds, so that it becomes more and more difficult to fix the status of specific serum therapy.

PREVENTION OF KIDNEY COMPLICATIONS. An important advance in our knowledge of this disease which is apparently quite unrelated to the revolutionary discoveries of the past few years was announced by Dr. A. A. Osman of Guy's Hospital, London. Certain tests, the character of which was not indicated, foretell the development of kidney complications and make it possible to administer preventives in the shape of simple alkaline compounds. While the normal frequency of these complications has been 5.5 per cent, under the new procedure this figure was reduced to less than 1 per cent, in a group of 620 patients.

Professor U. Friedemann of the Department of Infectious Diseases of the Rudolf Virchow Hospital, Berlin, contributed an exhaustive article on the question, Is the Dick Conception of Scarlet Fever Erroneous? which appeared serially in the *Klinische Wochenschrift*, closing in the issue of Dec. 2, 1928. The entire controversial material is analyzed and while the conclusions do not militate against the practical value of the Dick conception, the theory does not well accord with it. According to Friedemann the evidence weighed points to the non-specific character of the toxin obtained from the so-called streptococcus of scarlatina. There are numerous varieties of pathogenic streptococci which cause such dissimilar conditions as erysipelas, puerperal fever, septic sore throat, and local suppurations in addition to scarlet fever. Any of these may at times form a toxin, but rather as a casual by-product than an inevitable result and any of these toxins may be neutralized by the antitoxin of scarlet fever. The Dick doctrine was at first so well built up that it seemed impregnable and only the slow cumulation of data from many quarters has made it possible to question its soundness. It is of interest to note that Professor Friedemann is a believer in the clinical efficacy of the serum which certainly appears to act on the disease in a specific fashion (see articles in *Deutsche medizinische Wochenschrift*, 1928, vol. liv, pp. 813 and 863).

Some leading authorities were regarding scarlet

fever as consisting originally of a local streptococcal infection of the tonsils with later absorption of the bacterial toxins into the blood. If this hypothesis be correct, then removal of the tonsils might prevent infection or diminish greatly the risk. It occurred to two young physicians of Frankfurt am Main, Berberich and Jordanoff, to investigate the subject of the incidence of the disease in the tonsillectomized. In 362 of the latter, including both children and older subjects only 12 developed the fever after the operation had been performed and in three of these the infection at once followed the operation (so-called surgical infection). It was possible to examine the other nine patients who contracted the disease and it appeared that the removal of the organs had been incomplete. The authors published only a preliminary communication, in the *Deutsche medizinische Wochenschrift* for December 7, but one of them (Jordanoff) was to prepare a monograph on the subject.

SCHEER, ADMIRAL KARL FRIEDRICH REINHARD VON. Commander of the German fleet at the battle of Jutland, died at Marktredwitz, Bavaria, November 26. Born at Obernkirchen, Sept. 30, 1863; he entered the Royal Navy and served on the *Hertha*, 1880-82, on the *Bismarck*, 1884-86, on the *Sophie*, 1888-90, on the *Prinzess Wilhelm*, 1895-96, and later on the *Niobe*. He commanded torpedo boats, 1901-02, and was stationed on the battleship, *Elsass*, 1907-09, being made head of the high seas fleet in the latter year. Admiral Scheer was department director of the Navy in 1912. At the opening of the World War, in 1914, he was chief of the second battle squadron, and in 1915 was put in command of the third squadron. Being promoted to the head of the high seas fleet, Jan. 15, 1916, he was in command of the German Navy during the great battle with the British Navy off the coast of Jutland, May 31, 1916, when each side claimed the victory. After the battle Admiral Scheer succeeded Henning von Holtzendorff as chief of the admiralty staff, retiring Dec. 8, 1918. After the War, Admiral Scheer took part in politics as a moderate member of the Nationalist party.

SCHELER, MAX FERDINAND. German philosopher and educator and writer of books on philosophy and ethics, died at Frankfurt am Main, Germany, May 21. He was born at Munich, Germany, Aug. 22, 1874. He was educated at the gymnasium at Munich, and at the universities of Munich, Berlin, Heidelberg, and Jena, and became a docent in philosophy at Jena in 1902. He was in Switzerland in 1917 and in Holland in 1918 in the service of the German Foreign Office. In 1919 he was director of the research institution at Cologne. Later, and until his death, he was professor of philosophy and sociology at the University of Cologne and director of the sociological research institute at the same city. He published many works on philosophy, ethics, and similar subjects, two of the best known being *Problems of Knowledge* and *On the Sociology of Knowledge*.

SCHLAPP, MAX GUSTAV. American neurologist and criminologist, died at New York, March 5. He was born at Fort Madison, Iowa, Nov. 4, 1869. He studied at Cornell University, 1891-93, and then at the Bellevue Medical School at New York City. He studied for six years in Germany and obtained his medical degree at the University of Berlin. He returned to America in 1900,

and as a specialist in mental and nervous diseases became assistant professor of neuropathology at the medical school of Cornell University, New York City. He held that chair until 1914, and from that time until his death he was professor of neuropathology at the Post-Graduate Medical School, New York. In 1914 he was appointed a member of the New York State commission to investigate provisions for the mentally deficient. Dr. Schlapp was deeply interested in delinquent children and criminals and set afoot several movements for the amelioration of their condition. He was a member of the American Medico-Psychological Association, the New York Academy of Medicine, and the New York Neurological Society. He lectured and wrote extensively, and besides numerous papers relating to neurology, etc., wrote the following: *Causes of Defective Children*; *Behavior and Gland Disease*; *Mongolism, a Chemical Phenomenon*; *A Plan for the Reduction of Criminality*. He was also co-author of a book, *The New Criminal*, in preparation at the time of his death.

SCHMIDT, ETTORE. See SVEVO, ITALO.

SCHMITT, CHRISTIAN. Alsatian author and secretary of the library of Baden, at Karlsruhe, died April 28. He was born at Geudertheim, near Brumath, Mar. 28, 1865, and after attending preparatory schools, he studied at Strassburg. He first served as secretary of the Kaiser Wilhelm University, and of the library of Strassburg, and in 1920 received a similar position at the Baden library, which he held until his death. Besides arranging for the song book, *Erwinia* (1893-1902), he wrote both prose and poetry, publishing the following books: *Alsallieder* (reissued, 1901); *Die Weihnachtsboten, ein Züricher Prolog* (1902); and *Aus Höhen und Tiefen* (1906).

SCHMITZ, EUGENE F. American politician and musician, died at his birthplace, San Francisco, Calif., November 20. Born Aug. 22, 1864, he became an orchestra leader at the Columbia Theatre, San Francisco. Abraham Ruef, political leader of the Union Labor party, selected him as a candidate for mayor, and in 1900 secured his election. Schmitz was reelected in 1903, in spite of the rumor that he had sold privileges through his promoter. Democrats and Republicans combined against him in 1905, but Schmitz won the election. Opposition ceased temporarily after the earthquake of April 18, 1906, and all parties praised the mayor for his efficient, non-partisan organization of relief committees. When the rehabilitation work was done, the charges of corruption and graft were renewed, and Schmitz returned from a vacation trip in Europe in 1907 to answer more than forty indictments for extortion, mostly in connection with the trolley franchise. Schmitz, Ruef, and several others were found guilty and, on June 13, the mayor was sentenced to five years in the State penitentiary, for charging arbitrary license fees to restaurant proprietors. The case was appealed and, on Jan. 9, 1908, the Appellate Court set aside the verdict of the lower court, on the technical point that the indictment against Schmitz did not charge him with making threats of unlawful injury. Being released, Schmitz returned to the orchestra. He ran again for mayor in 1915, polling almost one third of the votes. He was elected to the Board of Supervisors in 1917 and again in 1921, but after being defeated in 1925, he retired definitely to private life. Schmitz composed an operetta,

The Maid of San Joaquin, which was produced unsuccessfully in New York.

SCHNEIDER, shnī'dēr, ALBERT. American scientist, died suddenly at Portland, Oreg., October 27. Born at Granville, Ill., Apr. 13, 1863, he was graduated from the College of Physicians and Surgeons, Chicago, in 1887, and in 1894 he received the B.S. degree from the University of Illinois, and the M.S. degree from the University of Minnesota, where he had become instructor in botany the previous year. After receiving the degree of Ph.D. from Columbia in 1897, he was appointed professor of pharmacognosy and bacteriology at the Northwestern University School of Pharmacy, Chicago. He held a similar professorship at the University of California in 1903, also teaching materia-medica and therapeutics, 1904-06. In addition to his educational work, he served as director of the experiment station of the Spreckels Sugar Company, 1906-07, as pharmacognosist of the U. S. Department of Agriculture, 1909-15, and as micro-analyst of the California State Food and Drug Laboratory, 1915-19. Dr. Schneider resigned from the University of California in 1919, to accept the professorship of pharmacognosy at the College of Pharmacy of the University of Nebraska. He returned to the coast after two years, and became Dean of the School of Pharmacy of the North Pacific College, Portland, Oreg., in 1922, holding that position until his death. Dr. Schneider invented a car ventilating system, and he lectured on crime investigation at the summer sessions of the University of California. Besides contributing numerous papers to scientific journals, he was editor-in-chief of the *Pacific Pharmacist*, 1910-15, and he translated *Westmaier's Compendium der Allgemeinen Botanik*, in 1896, and wrote many books on bacteriology and allied subjects, among the most important of which are *Primary Microscopy and Biology* (1890); *A Text-book of General Lichenology* (1897); *Microscopy and Micro-Technique* (1899); *General Vegetable Pharmacography* (1900); *Medicinal Plants of California* (1909); *Drug Plant Culture in California* (1912); *Bacteriological Methods in Food and Drug Laboratories* (1915); *Pharmaceutical Bacteriology* (1920); and *The Microbiology and Microanalysis of Foods* (1920).

SCHNEIDER, JACQUES. French manufacturer, aviator, sportsman, and donor of the Schneider Cup, an international seaplane trophy, died at Beaulieu-sur-Mer, France, May 1. M. Schneider presented the cup to the Aéro Club of France in 1912 for the purpose of developing marine aircraft through annual competition among the nations. Marcel Prevost won the first Schneider Cup race in 1913 by attaining a speed of about 60 miles per hour. On Sept. 26, 1927, it was won by Lieut. S. N. Webster of England, who flew at the rate of 231.488 miles per hour at Venice, Italy. The Schneider Cup races have been held every year since 1913 with the exception of the War years. In January, 1928, M. Schneider was present at the meeting of the International Aeronautic Federation at Paris and endorsed the plan to hold the race biennially instead of annually.

SCHOOL LUNCHEONS. See FOOD AND NUTRITION.

SCHOOLS. See EDUCATION IN THE UNITED STATES.

SCHROEDER, ALWIN. A famous American cellist, died at Jamaica Plain, near Boston,

October 17. Born near Magdeburg, June 15, 1885, he studied piano with his father and J. Andrae, and later violin with De Ahna in Berlin. The cello he studied entirely by himself and made such progress, that in 1875 he was engaged as solo-cellist with Liebig's Orchestra. After filling a similar position in Hamburg, he went to Leipzig, in 1880, as cellist of the Gewandhaus Orchestra, professor at the Conservatory and cellist of the Petri Quartet. In 1891 he came to America as solo-cellist of the Boston Symphony Orchestra, which post he held with signal distinction at various periods (1891-1903, 1910-12, 1918-20). From 1891-1907, he was a member of the celebrated Kneisel Quartet. In the latter year, he went to Frankfort-on-Main as solo-cellist of the Museum Orchestra and professor at Hoch's Conservatory, but returned to Boston the following year. From 1908-10, he was a member of the Hess-Schroeder Quartet, and in 1915 he joined the Margulies Trio, in New York, and the Boston String Quartet. Although a superb virtuoso, he was rarely heard as a soloist, his absorbing passion being chamber music. As an ensemble player, he had no superior and but few equals. He wrote some instructive works for cello.

SCHUBERT, CENTENARY. Franz Schubert, a German vocal and instrumental composer, was born at Lichtenthal, near Vienna, Jan. 31, 1797, and died in Vienna, Nov. 19, 1828. In view of the enormous popularity which this master's works enjoy today, it was not surprising that throughout the civilized world the centenary of his death should be observed by celebrations befitting the occasion. Just as the year 1927 had been a Beethoven year, so 1928 was preëminently a Schubert year. In both cases the celebrations were by no means confined to the actual anniversary day, but extended even beyond the limit of the calendar year. Organizations and individual artists vied with one another to pay homage to the memory of one of the immortals, and it may be asserted without fear of contradiction, that not a single day passed but witnessed the public performance of at least one work of Schubert.

As might have been expected, Vienna, the city where Schubert was born, lived, and died, strained every nerve for the purpose of surpassing in scope and splendor any celebration held elsewhere. In 1912 the city had bought and converted into a Schubert Museum the house at 54 Nussdorfer Strasse, where the master was born. In the centennial year, the house where he died, at 6 Kettenbrücken Gasse, was acquired for a similar purpose. On March 26, the exact anniversary of the only public concert Schubert gave in his life, the Gesellschaft der Musikfreunde repeated the identical programme arranged by Schubert. In August, the gathering of 180,000 singers, participating in a monster Sängerfest, was made the occasion of a two-week Schubert festival, culminating in the world-première of Richard Strauss' *Die Tageszeiten*, produced by the Schubert Band under its regular conductor, Viktor Keldorf. This work, for male chorus and orchestra, on four poems of Eichendorff, was written especially as a contribution to the centennial celebration. Although it cannot be ranked among its composer's greatest achievements, *Die Tageszeiten* rises far above the level of occasional compositions.

But the climax was not reached until the official celebration during the week beginning No-

vember 19, when practically nothing was heard but Schubert's music. The Staatsoper revived three of his operas, *Der häusliche Krieg*, *Die Zwillingbrüder*, and *Rosamunde*, the Gesellschaft der Musikfreunde produced the Mass in Eb, the Rosé and Busch quartets, augmented by assisting artists, almost all the chamber music, and the Philharmonic Society, under Furtwängler, the great symphonies in C and B minor, as well as Atterberg's questionable tribute. Out of the vast number of recitals given by individual artists, there stood forth preëminent the piano recitals by Bachaus and the song recitals by Elisabeth Schumann, Hans Duhan, Alfred Jerger, and Mia Peltenberg.

On the anniversary day itself, there were impressive ceremonies at the grave, the unveiling of a Schubert Fountain in front of the house where the master was born and, at the exact hour of his death (3 P.M.), a concert of appropriate selections from his chamber music and songs in the very room where he died.

Space forbids enumeration of details of celebrations held in practically every city of Germany and Austria, but it should not go unrecorded that in Halle there was given the world-première of Schubert's two-act opera *Die Freunde von Salamanka* (May 6).

While the United States was not behind in honoring the great German master, American enterprise contributed what will remain a lasting monument of the highest artistic merit, the magnificent Schubert Centennial Edition of phonographic records of practically all the recognized masterpieces, issued by the Columbia Phonograph Company in 16 albums of 78 double-faced discs. The same company's \$10,000 prize offered the preceding year (see YEAR BOOK, 1927) for the best symphonic work in the style of Schubert was awarded to a Swedish composer, Kurt Atterberg, for a Symphony in C. The work had several performances in Europe and in the United States, and even was recorded by the Columbia Company. Unfortunately, it was worthy neither of the prize nor the occasion; it was, as one of the judges frankly expressed it, merely "the best of a sorry lot submitted."

SCIENCES, NATIONAL ACADEMY OF. See NATIONAL ACADEMY OF SCIENCES.

SCIENTISTS, CHRISTIAN. See CHRISTIAN SCIENTISTS.

SCOTLAND. See GREAT BRITAIN.

SCULPTURE. The general tendency in sculpture, as in painting, was marked by a return to a more conservative and sound technique. An evidence of this was seen in 1927 in an exhibition of the work of Despiau, who was thoroughly academic. No more successful exhibition from the point of view of the interest of the public had been held in New York, and the interest continues. The one group exhibition in 1928, however, showed a decided preponderance of modernistic works, although the honors were divided between Maillol and Despiau. Other sculptors exhibiting in this group were Bourdelle, Dobson, Epstein, Haller, Kolbe, Mestrovic, and Carl Milles, the Swedish sculptor. Very few exhibitions of sculpture alone were held in 1928, and sculpture is too often the weak feature of an exhibition in which it is included.

One of the more interesting exhibitions was that of Gaston Lachaise, an American sculptor who was looked on with a good deal of interest. Other sculptors who exhibited during the past

year were Poupelet, Robert Laurent, and William Zorach. An out-door exhibition of sculpture was arranged in Rittenhouse Square by the Art Alliance of Philadelphia. Eighty-seven works of varied style were shown, of which a wooden statue by Robert Laurent was probably the best. One of the most notable displays was the group of American and French figures by Houdon, arranged in the sculpture rotunda of the Pennsylvania Museum for its opening exhibition. This proved a fitting memorial for the centenary of this well-known eighteenth-century sculptor.

The event of the year in the field of sculpture was the announcement by the National Sculpture Society of a large and representative exhibition of American sculpture to be held in San Francisco in the spring of 1929. Archer M. Huntington's generous gift of \$100,000 made the exhibition possible.

SCURVY. Scurvy in the adult (save in patients who come from tropical and subtropical countries where the disease still prevails) has been regarded as all but extinct in the United States, but evidence accumulates to suggest that in reality it is often overlooked. Thus, Dr. Shattuck of Boston (*Journal of the American Medical Association*, June 9, 1928) saw his first adult case in 1922, but study of the records of the Massachusetts General Hospital showed that adult cases were now and then interned; thus records of 14 cases were found over a period of 37 years. The disease was apparently on the increase, for five cases had been admitted in five years. The records of the Boston City Hospital showed no scurvy in adults before 1923, although 17 had been interned since that period. In other words 22 cases of a disease believed to be extinct have presented themselves in five years with a likelihood that numerous others have been masked under wrong diagnosis. It is of interest to note that the entire 17 patients in the Boston City Hospital lived alone without any feminine or other supervision (all were males), and had low earning capacity as a result of which they were poorly fed. Alcohol did not figure as a factor. It is evident, although the author does not specifically allude to it, that the high cost of food—in conjunction with low earning power and the absence of womanly thrift and economics—is well adapted to cause deficiency diseases of which scurvy is the oldest known.

SEAL FISHERIES. See ALASKA.

SEAPLANE. See AERONAUTICS.

SEISMOLOGY. According to Jeffreys, seismograms obtained near the epicentres of European quakes indicate the existence of three distinct layers in the earth's crust, viz., a thin sedimentary layer, beneath which is an intermediate basaltic layer 20 kilometers in thickness, followed by a granitic layer 10 kilometers in thickness, these in turn are underlain by an ultrabasic layer reaching halfway to the metallic core of the earth. Mohorovičić, however, maintains that the combined thickness of the intermediate and the granitic layers is 57 kilometers. Jeffreys consider that most quakes, including all large ones, have focal depths in excess of 35 kilometers.

As was shown by Omori, the distance of an earthquake focus from a neighboring station may be obtained from the duration of the preliminary tremors recorded there, and, if the distance of the picture is known, it is a simple matter to determine the depth of focus. Suyehiro has

in this way determined the focal depths of 17 quakes, each with an epicentre less than 100 kilometers from Tokyo, and finds that they fall into two classes, the depths ranging from 25 to 50 kilometers is one class and from 55 to 95 in the other. In the first class, each quake shows several groups of waves, while those of deeper origin have only one or two groups; this suggests that in the upper and more brittle layer, the initial movements start in succession, or in different places, while in the lower stratum a single movement usually takes place throughout the focal region.

Horizontal pendulums specially designed to record tilting of the surface of the earth have been found by Haeno to show two regular variations, one diurnal and the other annual, both agreeing closely with the variations in earth temperature at a depth of 10 centimeters, and also irregular variations which, in some cases at least, occur just before quakes. Imamura has similarly found that abnormal tilting of the land took place before the great quake of Sept. 1, 1923; in particular, a sharp tilting of 0.3" occurred during the eight hours just preceding the quake.

A new type of seismometer, devised by Wenner of the United States Bureau of Standards, in which the shock transmitted by the earth to the instrument is recorded through a galvanometer, was put into operation by the United States Coast and Geodetic Survey. Intensive study of local tremors with improved types of instruments was being continued in southern California, through the coöperation of several organizations.

The regions of California surveyed prior to 1900 were resurveyed by the United States Coast and Geodetic Survey during 1922-1925, in order to determine what earth movements had taken place in the interval, during and following the San Francisco earthquake of 1906. A preliminary report was issued in 1924, but the completion in 1928 of a new readjustment of the triangulation net covering the western United States has led to much more accurate and definite results, which differ considerably from the earlier conclusions. It is found that many stations in the neighborhood of the San Andreas fault, near and to the southward of San Francisco Bay, have moved by appreciable amounts: The trend of the displacements to the east of the fault is southeastward, while that of stations to the west of the fault is northward or northwestward; the largest movements have occurred close to the fault, while stations more than twenty miles from the fault have been affected only slightly if at all. The largest movement found is a relative shift of 14 feet between Ross Mountain and Point Reyes Lighthouse.

Among the workers in this field who died during the year were Emil Wiechert, March 19; and Giulio Gräblivitz, September 19.

An important publication was by H. P. M. Bouasse, *Séismes et sismographes* (Paris). See EARTHQUAKES; PHYSICS.

SELANGOR. See FEDERATED MALAY STATES.

SENEGAL, *sén'egal'*. A colony belonging to France on the west coast of Africa, under the Government of French West Africa (see FRENCH WEST AFRICA). Total area, 74,112 square miles; population in 1926, 1,318,287. Capital, St. Louis, with a population in 1917 of 23,326. Other important towns are Dakar, the seat of the Government-General of West Africa, and a fortified

naval station; population, 1918, 25,468, of whom 2791 were French; and Rufisque, population, 11,414.

The estimated area under cultivation has been placed at 307,000 acres. Cotton is cultivated, and a wild variety is also found. The principal source of wealth consists of peanuts, and the value of the export of this commodity is three times that of all other exports taken together. In 1926, the imports were valued at 909,998,954 francs and the exports at 885,945,699 francs. The local budget for 1926 was 85,801,324 francs. Dakar, Rufisque, and St. Louis are connected by a railway 165 miles in length, and there is another between Thiès and Kayes, a distance of 435 miles. The administration is in the hands of a lieutenant-governor, assisted by a council of 40 members, 20 of whom are elected by the French citizens and 20 by representatives of the native chiefs. The colony sends one Deputy to the French Parliament.

SENFEE COLLECTION. See ART SALES.

SERBIA. A former Balkan kingdom which was proclaimed in December, 1918, a part of the new Unitary State of the Serbs, Croats, and Slovenes. (See JUGO-SLAVIA.) In the new State Serbia is divided into two provinces, North Serbia, with an area of 19,286 square miles and a population, at the census of 1921, of 2,655,078, and South Serbia, with an area of 17,651 square miles and a population of 1,474,560. The former capital of Serbia (Belgrade) became the capital of Jugo-Slavia, and had a population in 1921 of 111,740.

SESQUICENTENNIAL CELEBRATIONS. See CELEBRATIONS.

SEVENTH-DAY ADVENTISTS. See ADVENTISTS.

SEVILLE, SPAIN, EXPOSITION AT. See EXPOSITIONS.

SEWERAGE AND SEWAGE TREATMENT. By far the largest activated-sludge plant in the world, if not the largest plant for treating sewage to a high degree, was put in operation in 1928 by the Chicago Sanitary District. It was designed to treat the sewage, chiefly domestic, to the average amount of 175,000,000 gallons per day, from an area of 78 square miles on which the estimated population for 1930 is 830,000. The works were planned for future doubling of capacity. The site has an area of 97 acres, but this does not provide for treatment of the sludge or solid matter (heavily diluted with water) which will be pumped through a 14-inch cast-iron pipe line 18 miles long for further treatment at the West Side plant of the Sanitary District. The latter plant, construction on which was well advanced at the close of 1928, consists of two-story or Imhoff settling and sludge-digesting tanks, designed to serve a population of 1,850,000. The sludge produced by this and the North Side plant will be dried on open-air beds, then stripped from the beds by machines and dumped on land alongside the Chicago Drainage Canal, an area of 900 acres being available for the purpose. This canal, put in use on Jan. 1, 1900, was designed to dispose of the sewage of the district by dilution, the diluting water being diverted from Lake Michigan southward to the Mississippi River system. Growth of population and other factors had made treatment necessary. The cost of the North Side plant and accessories was about \$19,000,000. The West Side plant was to cost some \$20,000,000. Smaller

plants had been built by the district and others were projected.

The project for a 180,000,000-gal. activated-sludge plant on Ward's Island, in the East River, New York City, to treat the sewage from a million or more people living in the Boroughs of Manhattan and the Bronx, mentioned in the 1927 YEAR BOOK, was advanced near the close of 1928 by the signing of a contract with a firm of consulting engineers for the design of the works. The latest estimates of the cost of these works was \$18,500,000. In addition, intercepting sewers in the two boroughs and tunnels from them beneath the river to the island are estimated to cost \$12,500,000. The contract price for the design of the activated-sludge plant was \$605,000. This includes no allowance for the design of the sewers and tunnels just mentioned, or for supervising the construction of these and the sewage-works, all of which will be done by the engineers of the two boroughs. The contract for the design of the Ward's Island sewage-works provided that the works shall "remove not less than 90 per cent of total suspended matter and not less than 95 per cent of the total bacteria" in the sewage, and that "when in operation [they] shall be free from nuisance due to obnoxious odors, gases, and dusts." The sludge from this plant was to be barged to sea for disposal, except that a plant for converting into fertilizer 50 tons of sludge a day may be built, chiefly for demonstration purposes.

At Milwaukee, Wis., and at a point owned jointly by Pasadena and three other California cities, the excess sludge from activated-sludge plants is dried and otherwise treated and sold for use as a fertilizer. Efforts to the same end had been made by the city of Houston, Texas, at one of its two activated-sludge plants and were being continued, with new apparatus, in 1928.

The instances cited are almost if not quite the only ones out of the scores of activated-sludge plants in the United States, Canada, England, and elsewhere where conversion of the sludge into fertilizer had been attempted, although this was one of the hopeful possibilities of the process when it was introduced 10 or a dozen years previously. The serious physical difficulties met in dewatering the sludge from say 97 to 10 per cent moisture and the capital and operating charges incurred had thus far deterred most engineers and most cities from attempting to convert the excess sludge into fertilizer. Where it had been attempted, no thoroughly satisfactory figures of cost have yet been published. Apparently, the best that can be said, taking into account high operating and capital charges, including depreciation of plant in the latter, is that the revenue from the fertilizer amounts to enough to pay the extra cost of producing it, compared with some other method of getting rid of the sludge. There was much the same uncertainty as to any other method of reclaiming the fertilizing value in sewage that had yet been attempted. Some engineers maintained, however, that the sewage disposal problem has been only partly solved unless the sludge is more thoroughly treated than is commonly done.

Cleveland, Ohio, completed its third sewage-works during the year, known as the Southerly. It was designed to treat sewage from 400,000 people in 1940, and consists of screens, grit chambers, Imhoff tanks, a pumping station, trickling or percolating filters, and humus or

final settling tanks. Glass-covered sludge-drying beds with an area of 94,000 square feet were proposed.

For a summary of an American engineer's notes on European sewage treatment, made during a visit in 1928 to 25 British and German cities, see article by George B. Gascoigne in *Engineering News-Record*, July 19, 1928, p. 91. Consult Metcalf and Eddy, *American Sewerage Practice*, vol. i, *Design of Sewers*—revised edition (New York). Veal, *The Disposal of Sewage*—chiefly from the British viewpoint (London and New York).

SHAFFER, NEWTON MELMAN. American surgeon, died at New York, January 3. He was born at Kinderhook, N. Y., Feb. 14, 1846. After studying at the Free Academy of the City of New York (now the College of the City of New York), and at the Hospital for the Ruptured and Crippled, New York, he entered the University Medical College of New York University and obtained his degree of M.D. in 1867. He was with the hospital, as student, clinical recorder, and assistant resident surgeon before becoming assistant surgeon of the New York Orthopaedic Dispensary and Hospital, in 1872; he later became chief surgeon and remained in the service of that institution until 1898. He was also orthopaedic surgeon at St. Luke's Hospital, 1872-87, and professor of orthopaedic surgery at the University Medical College and Cornell University Medical College. According to writers on medicine he was the first orthopaedic surgeon in America to be known by that title. He was mainly instrumental in the establishment of the New York State Orthopaedic Hospital, and he served as the chief surgeon of that institution for many years. Dr. Shaffer was the chairman of the committee which obtained recognition of orthopaedic surgery as a distinct branch of the profession, at the Tenth International Medical Congress, 1900. He was a member of several medical societies, and wrote *Selected Essays on Orthopaedic Surgery* (1923), besides numerous brochures and articles on his speciality.

SHAKESPEARE, JOHN HOWARD. English clergyman, a leader of the Baptist denomination, died at London, March 12. Born at Malton, England, in 1857, he was educated at University College, London, and at Regent's Park Baptist College, being graduated from the latter institution in 1881 and receiving a master's degree in the following year. From 1883 to 1898 he was minister of St. Mary's Baptist Church, Norwich, England. In the meantime he interested himself in the wider affairs of his denomination, and in 1898 went to London as secretary of the Baptist Union of Great Britain and Ireland, holding that post until 1924. He served as European Secretary of the Baptist World Alliance; president of the National Council of Evangelical Free Churches, 1916; moderator of the Federal Council of the Evangelical Free Churches of England, 1919-21; joint secretary of the Council and chairman of the United Navy, Army, and Air Force Board. Among his outstanding achievements were the establishment of the Baptist World Alliance and raising the Twentieth Century Fund and a fund of £250,000 to secure a living wage for Baptist clergymen. Dr. Shakespeare received the degree of D.D. from Glasgow University, and that of LL.D. from McMaster University, Toronto, Ont. He was a descendant of the grandfather of William Shake-

speare. He wrote: *Baptist and Congregational Pioneers: The Churches at the Cross-Roads.*

SHAKESPEARE STUDIES. See PHILOLOGY, MODERN.

SHANTUNG, shān'tōng'. One of the eighteen provinces of China proper; in dispute between China and Japan after the Treaty of Versailles; returned to China by Japan in accordance with the agreement reached at the Washington Conference of 1921-22. Area, 55,970 square miles; population, estimated at 25,810,000.

SHAW-LEFEVRE, GEORGE JOHN. See EVERSLEY, FIRST BARON OF OLD FORD.

SHEEP. See LIVESTOCK.

SHIP, NAVAL. See NAVAL PROGRESS.

SHIPBUILDING. The total output of mercantile shipbuilding throughout the world in 1928 amounted to 2,699,239 tons or an increase of 413,560 tons over the 1927 total of 2,285,679 tons. These statistics, from the annual summary of mercantile shipbuilding of the world compiled by *Lloyd's Register of Shipping*, which does not include warships, take into account merchant vessels of 10 tons gross and upward launched in 1928 irrespective of whether they were completed during the year or were still under construction. Compared with 1913, during which the pre-war world-record output was reached, the 1928 figures showed a decrease of over 600,000 tons.

These figures from the annual summary of *Lloyd's Register of Shipping* may be studied in connection with the statistics from the separate countries and the analysis of type of vessels and machinery included in the output of the year. There were 37 vessels of over 361,000 tons to be fitted with steam turbines, including 11 vessels having a combination of steam and turbines and reciprocating engines. During 1928 there were launched 302 vessels with a tonnage of 1,183,229 tons, fitted with internal combustion engines as against 254 vessels with 863,694 tons launched in 1928. The 1928 output of motor ships was 80 per cent of the world's output of steam tonnage as compared with 62.8 per cent in 1927. At the end of 1928, the motor ships building were 184,000 tons in excess of the steam tonnage being built. The total steam tonnage launched in 1928, amounting to 1,477,092 tons, included some 560,000 tons of steamers fitted for burning oil fuel, so that the tonnage depending exclusively on coal for propulsion amounted to less than 34 per cent of the world's total.

Of the 869 vessels launched in the world during the year, 153 were between 4000 and 6000 tons, 117 between 6000 and 10,000 tons, and 29 were over 10,000 tons each. The vessels of 20,000 tons and upward built during the year are listed below:

	Tons	Built in
Turbine S.S. <i>Bremen</i>	46,000	Germany
<i>Europa</i>	46,000	"
Turbo-electric, <i>Virginia</i>	20,773	United States
Motorship <i>Kungsholm</i>	20,228	Germany
Turbine S.S. <i>Duchess of Bedford</i>	20,123	Scotland
" <i>Duchess of Richmond</i>	20,022	"
" <i>Duchess of York</i>	20,022	"

During 1928, excluding vessels of less than 1000 tons, 99 vessels of 646,851 tons were launched, built for the carriage of oil in bulk.

As regards countries, those with the largest output recorded during 1928 were as follows:

	Tons
Great Britain and Ireland	1,445,920
Germany	376,416
Holland	166,754
Denmark	138,712
Sweden	106,912
Japan	103,663
United States	91,857
France	81,416

The accompanying table, also from *Lloyd's Register of Shipping*, indicates quite clearly the fluctuation in yearly totals for world tonnage launched during a period of years, and it is to be noted that during the five years, 1924-1928, the average tonnage launched annually in the world was about 268,000 tons less than the average for the five pre-war years, 1909-1913. The following paragraphs show the items of interest in regard to the tonnage launched in various countries during 1928.

GREAT BRITAIN AND IRELAND. While the tonnage launched during 1928, 1,445,920, was 220,047 tons more than for 1927 and represented 53.6 per cent of the world's output during 1928; nevertheless, it was 486,000 tons lower than in 1913, the pre-war record year. It was distributed as follows: England and Wales, 737,531 tons; Scotland, 531,917 tons; and Ireland, 76,472 tons. Distributed as regards leading shipbuilding centres, the production was as follows: The Clyde, 571,948 tons; the Tyne, 300,508 tons; the Wear, 207,646 tons; the Tees, 132,966 tons; Belfast, 75,738 tons; and the Mersey, 73,197 tons. Of the total tonnage launched, 1,153,636 tons were for registration in Great Britain and Ireland, and 292,284 tons were for owners in other countries; this figure being 20.2 per cent of the total tonnage and comparing with 21.8 per cent in 1927 and with 22 per cent for the average percentage in the pre-war years, 1909-1913.

As regards size, 97 vessels of between 5000 and 10,000 tons each were launched, and 16 vessels of 10,000 tons and upwards, the largest being the *Duchess of Bedford*, the *Duchess of Richmond*, and the *Duchess of York* referred to in the preceding table, the turbo-electric vessel, *Viceroy of India*, of 19,000 tons, and the motorship, *Rangitiki*, of 18,000 tons. Excluding vessels of less than 1000 tons, 51 tankers of 300,348 tons were launched during 1928. The average tonnage of steamers and motorships launched in Great Britain and Ireland, excluding vessels of less than 500 tons, was 4656 tons. There were 15 vessels to be fitted with steam turbines with a total of 138,094 tons, one of which, a ship of 19,000 tons, was fitted with turbines in connection with electric motors, and two vessels of 7777 tons which had a combination of steam turbines and reciprocating engines. There were launched during the year 76 motorships of 427,916 tons, the largest of which was the *Hangitiki*, of about 18,000 tons, and 42 others were of 5000 tons and upward.

GERMANY. In 1928 German shipyards launched 81 vessels of 376,416 tons as compared with 105 vessels of 289,622 tons in the preceding year. This total included 15 vessels of 164,813 tons to be fitted with steam turbines and included the two largest vessels launched in the world during the year, the *Bremen* and the *Europa*, listed in the preceding table. Germany's totals for turbine vessels included nine of 45,069 tons which had a combination of reciprocating engines and steam turbines. There were 36 vessels of 177,338 tons to

TABLE SHOWING THE NUMBER AND GROSS TONNAGE OF MERCHANT VESSELS OF 100 TONS GROSS AND UPWARDS LAUNCHED IN THE VARIOUS COUNTRIES OF THE WORLD DURING THE YEARS 1913-1927—LLOYD'S REGISTER OF SHIPPING

Year	Austria Hungary		Belgium		British Dominions Coasts		Canadian Lake Ports		Denmark		France	
	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons
1913	17	61,757	54	30,181	77	26,744	14	21,595	31	40,932	89	176,095
1914	11	34,335 ^a	8	17,145	58	22,288	22	25,246	25	32,815	33	114,052
1915	..	(^a)	No Returns		27	13,289	4	8,725	23	45,198	6	25,402
1916	..	(^a)	No Returns		36	22,577	4	8,994	28	35,277	9	42,752
1917	..	(^a)	No Returns		80	66,475	25	27,996	23	20,445	6	18,828
1918	..	(^a)	No Returns		184	230,514	22	49,390	13	26,150	3	13,715
1919	2	2,433	235	298,495	28	60,233	46	37,766	34	32,633
1920	5	8,371	90	174,557	13	29,087	30	60,669	50	93,449
1921	3	17,909	49	118,303	5	11,372	37	77,238	65	210,663
1922	4	7,497	37	53,347	2	9,418	23	41,016	62	184,509
1923	5	1,102	41	37,072	3	4,191	24	49,479	27	96,644
1924	2	3,997	29	29,815	2	15,064	33	63,937	26	79,685
1925	3	4,206	47	32,220	4	13,858	21	73,263	35	75,569
1926	8	3,627	39	22,842	3	10,836	25	72,108	34	121,342
1927	8	4,693	24	20,119	5	10,131	20	72,038	22	44,335
1928	3	16,243	47	22,959	1	734	31	138,712	20	81,416

Year	Germany		Great Britain and Ireland		Holland		Italy		Japan		Norway	
	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons
1913	162	465,226	688	1,932,153	95	104,296	38	50,356	152	64,664	74	50,637
1914 ^a	89	387,192 ^a	656	1,683,553	130	118,153	47	42,981	32	85,861	61	54,204
1915 ^a	...	(^a)	327	650,919	120	113,075	30	22,132	26	49,408	59	62,070
1916 ^a	...	(^a)	306	608,235	201	180,197	10	56,654	55	145,624	52	42,458
1917 ^a	...	(^a)	286	1,162,896	146	148,779	11	38,906	104	350,141	44	46,103
1918 ^a	...	(^a)	301	1,348,120	74	74,026	15	60,791	198	489,924	51	47,723
1919 ^a	...	(^a)	612	1,620,442	100	137,086	32	82,713	133	611,833	82	57,578
1920 ^a	...	(^a)	618	2,055,624	99	183,149	82	133,190	140	456,642	30	38,555
1921	242	509,064	426	1,588,052	98	232,402	85	164,748	43	227,425	35	51,458
1922	187	525,829	235	1,031,081	60	163,132	42	101,177	49	83,419	23	32,391
1923	109	345,062	222	645,651	35	65,632	21	66,523	44	72,475	48	42,619
1924	108	175,113	494	1,439,885	41	63,627	19	82,526	31	72,757	34	25,130
1925	121	406,374	342	1,084,633	47	78,823	31	142,046	23	55,784	48	28,805
1926	60	180,548	197	639,568	47	93,671	27	220,021	26	52,405	25	9,237
1927	105	289,622	371	1,225,873	68	119,790	25	101,076	19	42,359	12	5,363
1928	81	376,416	420	1,445,920	74	166,754	29	58,640	37	103,663	12	10,401

Year	Spain		Sweden		United States Coast		Great Lakes		Other Countries		Total	
	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons
1913	12	8,488	25	18,524	182	228,232	23	48,216	17	4,786	1,750	3,332,882
1914 ^a	5	5,163	26	15,163	84	162,937	10	37,825	22	13,840	1,319	2,852,753
1915 ^a	5	12,765	27	20,319	76	157,167	8	20,293	5	876	743	1,201,638
1916 ^a	6	10,847	34	26,769	167	384,899	44	119,348	12	3,449	964	1,688,080
1917 ^a	10	22,777	34	26,760	266	821,115	60	176,804	17	9,761	1,112	2,937,786
1918 ^a	18	17,389	36	39,583	741	2,602,153	188	430,877	22	17,089	1,866	7,144,444
1919 ^a	41	52,609	53	50,971	852	3,579,826	199	495,559	34	34,322	2,483	7,144,549
1920 ^a	13	45,950	46	63,823	467	2,348,725	42	127,528	34	42,047	1,759	5,861,666
1921	11	47,256	27	65,911	166	995,129	7	11,284	78	63,465	1,377	4,841,679
1922	2	7,776	14	30,038	55	97,161	4	21,977	53	77,316	852	2,467,084
1923	7	4,488	10	20,118	69	96,491	14	76,326	22	19,308	701	1,643,181
1924	2	3,859	12	31,211	71	90,155	8	49,308	12	21,673	924	2,447,751
1925	1	127	17	53,750	94	78,766	7	50,010	14	15,165	855	2,193,404
1926	6	25,671	14	53,518	73	115,217	5	35,396	11	18,970	600	1,674,977
1927	5	22,899	18	67,361	58	124,270	8	54,948	34	80,802	802	2,285,679
1928	7	11,852	20	106,912	57	86,092	6	5,265	24	67,260	869	2,699,235

^a Returns are not available as regards Germany and Austria-Hungary for the war period (1914-18) nor as regards Germany for 1919 and 1920.

be fitted with oil engines, the largest of which were the *Kugsholm*, of 20,223 tons, and the *St. Louis*, of about 15,500 tons. Two tankers were launched of 14,109 tons, one of which was a motorship of 11,500 tons. There were 12 vessels launched between 6000 and 8000 tons, 8 between 8000 and 10,000 tons, and the 5 referred to above exceeding 10,000 tons.

HOLLAND. Exclusive of the vessels used for river navigation (a considerable amount of tonnage), the total tonnage launched during 1928, 166,754 tons, 74 vessels, was 46,964 tons higher than in 1927. The largest vessel launched was the *Nieuw Zeeland*, of 10,906 tons. There were 43 vessels of 85,132 tons to be fitted with internal combustion engines, seven of which were of 6000 tons and upward, the largest being the *Poelau Laut* and *Poelau Roebiah* of about 10,000 tons each. Exclusive of ships of less than 1000 tons, seven tankers of 41,925 tons were launched, five of which of 36,744 tons were motorships.

DENMARK. In 1928 the largest tonnage ever recorded in Denmark, 138,712 tons, was

launched. This was 66,674 tons higher than in 1927 and exceeded the combined output for the six pre-war years, 1908-1913. Of this amount 133,768 tons were motorships, of which 11 between 5700 tons and 9200 tons were launched. A tanker of 3100 tons with internal combustion engines also was launched.

SWEDEN. This country also had in 1928 the greatest output ever recorded, namely, 106,912 tons or 39,551 tons more than in 1927 and slightly in excess of the total output for the pre-war years of 1904-1913. Of this, nearly 97 per cent was composed of motorships of which six were between 5000 and 8000 tons, and six between 8000 and 10,000 tons each. There were launched 10 tankers, all motorships, aggregating 81,060 tons.

JAPAN. In 1928 the output of shipping launched, 103,663 tons, was an increase of 61,304 tons over 1927 and was the largest figure recorded for Japan since 1921. Of the 18 motorships aggregating 58,784 tons, the *Asama Maru*, of 16,780 tons, was the largest, with four others exceed-

ing 6000 tons each. Two turbine steamers of 10,325 tons were launched and three tankers each exceeding 7000 tons.

FRANCE. The output for 1928, 81,416 tons, was 37,081 tons higher than that for 1927 and included 54,764 tons of motorships or more than double the steam tonnage. There were three motorships of between 8000 and 8300 tons each launched and four between 6000 and 8000 tons each. Two steamers exceeding 7000 tons each were launched, as were also seven tankers of 53,863 tons which, with the exception of one steamer of 7670 tons, were all fitted with internal combustion engines.

ITALY. The tonnage launched in 1928, 58,640 tons, was lower than in any year since 1917, although a decrease of 42,436 tons from the 1927 record. There were 19 vessels of 48,436 tons in the Trieste District as compared with the output of 73,955 tons in 1927. The totals included three steamers of 18,417 tons intended for carrying oil in bulk, including the *Juvenal*, of 13,247 tons, launched at Trieste. There were also launched 15 motorships of 35,552 tons.

UNITED STATES. *Lloyd's Register of Shipping* recorded for the United States an output of 91,357 tons launched which was not only considerably less than the 179,218 tons launched in 1927 but was the lowest for 32 years. The tonnage launched included 22 steamers and motorships of 53,195 tons and 30 barges of 24,805 tons built on the Atlantic coast; six steamers and motorships of 5265 tons built on the Great Lakes; and five vessels of 8092 tons built on the Pacific coast. The largest vessel launched during 1928 was the turbo-electric vessel, *Virginia*, of 20,773 tons, built at Newport News, and, next in point of size, the *Mary Ellen O'Neil*, a motorship of 11,628 tons, built at Chester, Pa. A motor tanker of 8942 tons also was launched at Chester, but no other ship exceeding 4000 tons figured in the year's production. The internal combustion engine tonnage launched totaled 28,085 tons, and of oil tankers of 1000 tons and upward, three, aggregating 23,505 tons, were launched.

According to the shipbuilding returns for 1928 compiled by the *Marine Engineering and Shipping Age* (New York), there was a marked decrease in the amount of tonnage built in the United States in 1928 as compared with the previous year. There were reported built and delivered 452 merchant vessels of all types with a total of 231,521 gross tons, the output of 42 shipyards. At the end of the year, 33 American shipyards reported 124 merchant vessels of 104,305 gross tons under construction. The 1928 output represented a decrease of 41.5 per cent as compared with 1927 and an increase of 2.5 per cent over 1926.

At the end of the year, a more hopeful feeling was being manifested and plans and specifications had been or were being prepared for the construction of 20 passenger and cargo vessels for carrying mails to foreign countries under the terms of the Jones-White Act (See SHIPPING). These vessels were to range from 10,000 to 20,000 tons dead weight and from 12 to 18 knots speed and were to be provided with modern facilities for passenger service. Mail contracts awarded to American shipowners during the year provided for the construction, within five years, of 12 additional relatively large and fast combination passenger and cargo vessels.

Of the vessels delivered by shipyards in the United States during 1928, 36, or 35 per cent, with a gross tonnage of 80,934 and a total horse power of 85,605 were propelled by steam and 63, or 15.8 per cent, with a tonnage of 36,451 were motor ships, while the remaining 49.2 per cent were barges or other non-propelled craft. Atlantic coast and Gulf yards constructed 60 per cent of the year's output; Great Lakes yards, 6 per cent; Western river plants, 30 per cent; and West coast yards, 4 per cent.

The notable vessels completed during the year were the electrically driven passenger and freight steamships, *California* and *Virginia*, each of 21,000 tons, built by the Newport News Shipbuilding and Drydock Company for the Panama Pacific Line of the International Mercantile Company, which also had under way a third liner for this service. The Federal Shipbuilding and Drydock Company built the 8100-ton Southern Pacific liner, *Dixie*, and the Ellicott Machine Corporation of Baltimore built the Diesel hydraulic dredge, *Las Cruces*, of 2500 gross tons, for the Panama Canal. A turbo-electric passenger and cargo vessel of 9000 gross tons was placed under contract with the New York Shipbuilding Company of Camden, N. J., by the Grace Line; while the Sun Shipbuilding and Drydock Company of Chester, Pa., had a 10,000 ton passenger and cargo motor ship under construction for the American-South African Line.

The U. S. Shipping Board vessel, *Mercer*, had been in regular transatlantic service without interruption for over a year, using as fuel pulverized coal. Minor difficulties were encountered, principally in securing satisfactory distribution to the three furnaces of the Scotch boilers, but that problem appeared to have been solved by rearrangement of the piping and the use of a pneumatic distributor. All things considered, the cost of operation with pulverized coal (14,000 B. t. u. at \$5 per ton) seemed to be about on a par with oil at \$1 a barrel. The low price of boiler oil, which was to be effective in the year 1929, would temporarily wipe out the margin in favor of pulverized coal for marine use, but how long such a situation would last was uncertain. For vessels in the Pacific and Gulf port trade, oil has a decided advantage.

The Canadian collier, *Lingan*, had been running on the St. Lawrence with pulverized coal for several months, and the English steamer, *Stuartstar*, partly equipped to burn pulverized coal, operated between England and Buenos Aires. The latter vessel employed high-speed mills. The British Admiralty was also reported to be carrying on some investigations along this line.

See also DYNAMO-ELECTRIC MACHINERY and NAVAL PROGRESS.

SHIPPING. Substantial improvement was to be recorded in the world's shipping industry during 1928, and at the end of the year there was a reduced amount of idle tonnage in the various countries, which was accompanied by an expanding sea trade and rising freight rates. On December 31 there was less shipping laid up in the principal maritime countries of the world than at any time since the post-war depression, amounting on Dec. 31, 1928, to 3,947,000 gross tons or a decrease of 352,000 tons or 8 per cent from Jan. 1, 1928, and a decrease of 1,664,000 tons or 30 per cent from Jan. 1, 1925.

The preponderance of laid-up shipping was to be found in the United States and in Great Britain, the former country showing 2,816,000 tons at the end of 1928 as compared with 2,978,000 tons at the end of 1927, and 4,223,000 tons at the end of 1924. Great Britain at the end of 1928, had 467,000 tons laid-up, as compared with 539,000 tons at the end of 1927.

QUARTERLY INDEX NUMBERS OF FULL-CARGO
FREIGHT RATES, JANUARY, 1923, TO
DECEMBER, 1928.

[Based on the average of rates for 1911-13 as 100]
Quarterly period 1923 1924 1925 1926 1927 1928

Quarterly period	1923	1924	1925	1926	1927	1928
January-March	110	111	108	94	112	93
April-June	109	110	96	89	107	92
July-September	104	102	98	101	104	97
October-December	107	102	99	124	103	105

^a As there were no exports of coal from the United Kingdom during May-November, 1926, the index numbers for this period were based on the remaining available routes, as shown in the Transportation Division's table of the Department of Commerce.

In regard to freight rates the Transportation Division of the U. S. Department of Commerce reported that during 1928 a decline in freight rates not only was checked in the third quarter but in the final three months a substantial gain was scored: The trend of freight rates is indicated in the accompanying table from *Commerce Reports*.

In 1928 vessels with a tonnage capacity of 80,207,772 entered ports of the United States and with a tonnage capacity of 80,663,836 cleared, as compared with total entries of 74,309,813 and clearances of 75,440,332 in 1927.

Of this total, 39 per cent of the entries in 1928 were American vessels; as against 39.41 per cent in 1927; and of the clearances 39.35 per cent as against 39.49 per cent in the earlier year. Of the American tonnage entering the United States ports in 1928, 31,284,611 tons, 22,970,848 tons was with cargo and 8,313,763 was in ballast, while of the clearances, 31,734,381 tons, 21,802,009 tons was with cargo and 9,932,012 in ballast.

The world's merchant fleets, disregarding sailing vessels and all wood vessels at the end of June, 1928, according to *Lloyd's Register of Shipping*, amounted to 61,594,000 tons, a figure that can be compared with 42,514,000 tons at the end of June, 1914, immediately before the World War. Studying these figures further, it is interesting to note that tankers had increased since 1914 from 1,479,000 tons to 6,544,000 tons, and motor ships, including sailing vessels fitted with auxiliary power, from 234,000 tons to 5,432,000 tons. In regard to the relative use of coal and oil fuel for boilers, a great change had taken place, since in 1914 the tonnage of steamers fitted for oil fuel was 1,310,000 tons, while in 1928 the corresponding figures indicated over 19,000,000 tons.

The Twelfth Annual Report of the U. S. Shipping Board covering the fiscal year ended June 30, 1928, indicated a substantial advancement in the Government's policy of transferring Shipping Board tonnage to private American control. During the fiscal year, four complete lines aggregating 45 vessels having 401,802 dead-weight tons and an additional two vessels having

WORLD TONNAGE
From *Lloyd's Register of Shipping*
[100 gross tons and over]

Flag	Steam and gas		June 30, 1928		Total	
	Number	Gross	Number	Gross	Number	Gross
American ^a	3,554	13,607,381	782	930,577	4,336	14,537,958
Argentine	252	264,898	40	22,716	292	287,614
Belgian	230	488,219	3	4,390	233	492,609
Brazilian	344	542,092	44	17,376	388	559,468
British ^b	9,840	22,504,176	843	278,397	10,683	22,782,573
Chilean	116	159,568	14	11,296	130	170,864
Chinese	212	315,729	6	1,550	218	317,279
Cuban	52	45,402	18	7,177	70	52,579
Danish	627	1,042,209	86	25,330	713	1,067,539
Danzig	33	127,568	...	...	33	127,568
Dutch	1,270	2,809,375	20	7,330	1,290	2,816,705
Estonian	62	42,476	45	10,154	107	52,630
Finnish	239	213,991	115	66,590	354	280,581
French	1,482	3,255,832	200	88,633	1,682	3,344,465
German	2,053	3,738,067	27	39,184	2,080	3,777,251
Greek	515	1,187,508	...	...	515	1,187,508
Honduran	28	69,277	2	347	30	69,624
Italian	1,142	3,348,732	287	80,085	1,429	3,428,817
Japanese	2,048	4,139,815	...	...	2,048	4,139,815
Latvian	81	113,861	17	2,893	98	116,754
Mexican	43	46,916	15	7,485	58	54,401
Norwegian	1,765	2,953,944	22	14,263	1,787	2,968,207
Panaman	29	71,442	2	800	31	72,242
Peruvian	26	52,210	16	16,790	42	69,100
Philippine	99	95,444	...	...	99	95,444
Portuguese	169	219,337	101	26,789	270	246,126
Rumanian	34	71,503	...	...	34	71,503
Russian	349	373,836	5	2,933	354	376,819
Spanish	789	1,137,813	95	26,459	884	1,164,272
Swedish	1,239	1,411,730	144	35,740	1,383	1,447,470
Turkish	179	159,836	...	...	179	159,836
Uruguayan	...	...	...	...	...	...
Venezuelan	32	45,193	8	5,408	40	50,606
Yugoslavian	145	260,912	...	...	145	260,912
Other countries	269	180,424	25	8,716	294	189,140
Countries not stated	40	62,697	39	55,688	79	118,385
Total	29,387	65,159,413	3,021	1,795,246	32,408	66,954,659

^a Including vessels on Great Lakes.

^b United Kingdom, Australia, New Zealand, India, Canada, and other dominions, including vessels on Great Lakes.

COMPARATIVE STATISTICS OF WORLD SHIPPING

	Steam and gas		Sail		Total	
	Number	Gross	Number	Gross	Number	Gross
1927	28,967	63,267,302	3,208	1,925,608	32,175	65,192,910
1926	29,092	62,671,937	3,523	2,112,433	32,615	64,784,370
1925	29,205	62,380,376	3,711	2,261,012	32,916	64,641,418
1924	29,024	61,514,140	3,932	2,509,427	32,956	64,023,567
1923	29,246	62,335,373	4,261	2,830,865	33,507	65,166,238
1922	29,255	61,342,952	4,680	3,027,834	33,935	64,370,786
1921	28,433	58,846,325	4,773	3,128,328	33,206	61,974,653
1920	26,513	53,904,688	5,082	3,409,377	31,595	57,314,065
1919	24,386	47,897,407	4,869	3,021,866	29,255	50,919,273
1916	24,132	45,247,724	6,035	3,435,412 ^a	30,167	48,683,136
1915	24,508	45,729,208	6,212	3,532,561 ^a	30,720	49,261,769
1914	24,444	45,403,877	6,392	3,685,675 ^a	30,836	49,089,552

NOTE.—All figures are prepared from *Lloyd's Register*; figures for 1917 and 1918 not reported.

WORLD STEAM AND MOTOR VESSELS OF 100 GROSS TONS AND OVER CLASSIFIED
ACCORDING TO ENGINES AND FUEL
[From *Lloyd's Register of Shipping*.]

	1924		1925		1926		1927	
	Number	Gross tons	Number	Gross tons	Number	Gross tons	Number	Gross tons
Engine:								
Reciprocating	25,556	50,669,316	25,521	50,516,808	25,251	49,997,901	24,919	49,730,815
Turbine	1,367	8,795,584	1,404	9,100,274	1,366	9,137,675	1,374	9,228,983
Internal combustion	953	1,654,546	1,116	2,403,070	1,302	3,197,243	1,476	3,991,123
Steam auxiliary	151	73,442	135	49,221	132	43,077	122	36,680
Motor auxiliary	997	321,252	1,029	311,003	1,041	296,041	1,076	279,701
Fuel:								
Coal	23,727	42,384,270	23,570	41,862,181	23,173	40,935,114	22,792	40,514,719
Oil	5,297	19,129,870	5,635	20,518,195	5,919	21,736,823	6,175	22,752,583
Total	29,024	61,514,140	29,205	62,380,376	29,092	62,671,937	28,967	63,267,302

18,260 dead-weight tons were sold for guaranteed operation. In addition to these, 20 ships with a total dead-weight tonnage of 133,942 were sold to private American owners. This record brought the total sales to June 30, 1923, up to 1557 with an aggregate dead-weight tonnage of 7,587,238. Fifteen established lines were included in this total.

With the sales completed as of the date of the report, a total of only 758 vessels remained in the Government's possession. The fiscal year 1927-28 saw the sale of all the Government's remaining lines on the Pacific Ocean. The twenty-one established lines which were still being operated by the Shipping Board on June 30, together with 505 ships in the laid-up fleet, were offered for sale to American citizens at low prices and on attractive terms. While the year was a notable one in the matter of sales, the report indicated that the Jones-White measure, providing more liberal ocean mail rates and ship construction loans, was further stimulating the desire of American citizens to take over the Board's remaining ships.

The report set forth the eight recommendations for the advancement of the American merchant marine. Should these recommendations receive the attention of Congress, it was believed that they would result in advantages to private shipping under the American flag. The recommendations were as follows:

1. The legal department of the board has spent several years in codifying the navigation laws, and the resulting code, together with a comprehensive bill amending and revising it, will again be presented to Congress at the opening of the next session. The enactment of the code should no longer be delayed.

2. Changes should be made in the present laws relating to the division of damages in cases of collisions of vessels at sea, to conform in principle to the proposals of the International Marine Convention of 1910. These changes should be brought about by legislation rather than by treaty.

3. Recommendation is made that legislation looking to the adoption of The Hague rules, substantially as provided for in H. R. 12208, introduced at the last

session of Congress, should be enacted at an early date.

4. A load-line bill should be enacted into law prior to the forthcoming International Conference on Safety of Life at Sea, which is scheduled to be held in London in the spring of 1929. The United States Load Line Committee (1928), formed during the period covered by this report, is now making a comprehensive study of this subject and at a later date will doubtless submit its recommendations to Congress.

5. Provision should be made for tax exemption on American vessels operating in foreign trade, including a provision whereby deductions shall be allowed from taxable incomes derived from operating profits to the extent that such profits are devoted to new ship construction in American yards.

6. Legislation should be enacted looking to the transfer to privately owned American shipping interests of the peace-time business now handled by Army and Navy transports and by the vessels owned and chartered by the Panama Steamship Line.

7. Funds should be provided to carry into effect the act of Congress approved February 28, 1925, providing for the creation of a naval reserve.

8. Congress might well give further consideration to the question of marine insurance, to the end that there may be established an insurance system which will place American vessels on an equality with foreign vessels in this important respect.

The Jones-White Act, as the Merchant Marine Act of 1928 became known, was approved by President Coolidge on May 22, 1928. It came as the result of a conference on the American merchant marine held in Washington January 10 and 11, 1928, in which a number of steamship men met with the members of the Shipping Board. The outcome of their deliberations was the Merchant Marine Act of 1928, which contained the following important provisions:

1. Prohibits sale of vessels by the Shipping Board except when in its judgment the building up and maintenance of an adequate merchant marine can be best served thereby, and then only upon the affirmative vote of five members of the board.

2. Authorizes the board to remodel and improve its vessels so as to equip them adequately for competition in the foreign trade of the United States.

3. Recognizes the necessity for replacements and additions in the Government fleet, in order "to give the United States an adequate merchant marine," and authorizes and directs the board to present to Congress,

from time to time, recommendations as to new construction.

4. Increases the construction loan fund to \$250,000,000 and liberalizes the terms under which loans may be made for new construction or for reconditioning, remodeling, or improving vessels already built. The loan period is extended to 20 years; a lower interest rate is provided for vessels operated in foreign trade; and loans are authorized for sums equal to three-fourths the cost of the vessel or vessels to be constructed, or for three-fourths the cost of the reconditioning or remodeling work.

5. Provides increased compensation at a stipulated rate per nautical mile, based on a graduated scale of speed and tonnage, for the carriage of ocean mails in vessels registered under the laws of the United States. (For detailed schedule of rates, see report of Bureau of Traffic.) The Postmaster General is authorized to enter into contracts with citizens of the United States whose bids are accepted, for the carrying of mails, the term of such contract not to exceed 10 years.

6. Permits naval officers of the United States to volunteer for service on mail-carrying vessels of the merchant marine. When accepted by the owner or master thereof, they may be assigned to this duty by the Secretary of the Navy. While in such employment, naval officers shall receive from the Government half pay and from the owner or master of the vessel such other compensation as may be agreed upon.

7. Authorizes the board to create an insurance fund to be used in insuring the legal or equitable interest of the United States (1) in any vessel constructed or in process of construction, and (2) in any plants or property in the possession or under the authority of the board.

8. Directs that officers and employees of the United States traveling on official business overseas shall, when practicable, travel on ships registered under the laws of the United States.

9. Provides that in national emergency the Federal Government may seize and purchase or use for national defense (1) any vessel in respect of which a loan is made from the construction loan fund, at any time during the life of the loan; and (2) any vessel in respect of which an ocean-mail contract is made under the provisions of the act, at any time during the life of the contract.

10. Reaffirms the policy and primary purpose set forth in section 7 of the Merchant Marine Act of 1920.

The report of the Shipping Board reviewed the progress made under the Merchant Marine Act of 1928, the Jones-White Law. Optimism for the beneficial effects of this law was expressed.

It is too soon to attempt to evaluate the actual results of the working out of this measure, but already—June 30, 1928—there are indications that considerable new construction in American yards will be undertaken at an early date, while other signs point to a stimulated desire on the part of private American citizens to acquire some of the steamship lines now being operated by the board. The new measure may therefore be said to give every reasonable indication of accomplishing the three main purposes for which it was enacted, namely, to assist in the development of the American merchant marine generally, to aid in increasing the foreign commerce of the United States, and to facilitate the transfer of the Government's war-built fleet and established services to private American ownership. With a full understanding of the magnitude of its task and of the economic problems facing it, the board realizes that these purposes cannot be accomplished overnight. The enactment of the Merchant Marine Act of 1928, supplementing the legislation previously enacted, should be looked upon as aiding in the solution of current problems, but not as eliminating them altogether.

Due to constantly fluctuating conditions in the world's ocean-carrying trade, the shipping problem, far from being static and fixed, is always changing. It follows that unless our plans for the merchant marine are made flexible, in order to meet changing conditions, we may find that the remedy which effectually disposes of the problems of today will completely fail to solve those arising tomorrow. Of one thing we may be sure—the American shipping industry cannot stand still. If it does not keep abreast of the times, it will be forced into a subordinate position by the activities of its foreign competitors. For example, the number of ships being built at the present time in foreign yards indicates that in the matter of new construction we are rapidly being outdistanced by some of the other maritime nations, the latest figures showing that for every ocean-going ship that we are building Great Britain is building 50, Germany

10, France and Italy each 5, and Japan 4. How effective the Merchant Marine Act of 1928 will be, in stimulating activity in American shipyards remains to be seen.

The U. S. Commissioner of Navigation, in his annual report for the fiscal year 1927-28, stated that on June 30, 1926, the merchant marine of the United States including all kinds of documented craft comprised 25,385 vessels of 16,683,061 gross tons of which 2336 seagoing vessels of 10,882,793 gross tons were of 1000 tons or over, compared with 2447 vessels of 11,071,918 gross tons on June 30, 1927. Of the 1928 tonnage, 1201 vessels of 6,161,871 gross tons were engaged in the foreign trade and 1494 vessels of 5,002,487 gross tons in the coasting trade. These figures may be compared with the maximum volume of tonnage in the foreign trade, 10,699,596 gross tons, which was reached on June 1, 1921. In contrast with the decrease in the foreign trade, the coasting trade exclusive of the trade on the Great Lakes had increased 2,558,041 gross tons. During the fiscal year, 969 vessels of 257,180 gross tons were built and documented by the Bureau of Navigation, as against 882 vessels of 245,122 gross tons in 1927. This new tonnage included 12 steel passenger steamers of 75,258 gross tons, 4 steel cargo steamers of 32,228 gross tons, 2 steel tankers of 13,116 gross tons, and 1 ferry of 2767 gross tons. There were building or under contract to build in the United States shipyards on July 1, 1928, 483 vessels of 264,410 gross tons, as compared with 882 vessels of 245,122 gross tons built and 280 vessels of 219,044 gross tons under contract to build in 1927.

The accompanying summary prepared by the Division of Statistics of the U. S. Shipping Board shows the employment of American steam and motor merchant vessels of 1000 gross tons and over on Dec. 31, 1928. The table does not include lake and river tonnage.

There were 38 vessels of 178,603 gross tons employed in nearby foreign service, while in South American service 5 vessels of 59,366 gross tons were trading with the east coast and 6 vessels of 36,492 gross tons, with the west coast. In transatlantic service, 12 vessels of 205,152 gross tons were trading with Atlantic ports of Europe and the United Kingdom. In the transpacific service, 9 vessels of 127,286 gross tons were on lines to the Orient and the Far East; 3 vessels of 17,994 gross tons, with Australia; and 8 of 87,875 gross tons, were on regular round-the-world service. The above figures accounted for 31 passenger and combination ships of 712,768 gross tons in foreign service. American vessels in coastwise service totaled 89 of 458,913 gross tons and were all privately owned. There were 37 of 175,473 tons in the Atlantic and the Gulf trade; 27 of 87,332 tons were on the Pacific; 8 of 82,311 tons ran on intercoastal routes; 12 of 90,231 tons to Hawaii; and 5 of 23,566 tons to Porto Rico. The general cargo ships of the United States merchant marine totaled 1429 of 6,666,147 tons of which 408 of 1,640,586 tons were in the coastwise trade; while 471 of 2,535,680 gross tons were in the foreign trade. Of these last, 225 of 1,108,301 gross tons were privately owned; while 244 of 1,422,178 gross tons belonged to the United States Government. The total number of tankers in the United States merchant marine was 361 with a gross tonnage of 233,-

278, of which 354 with a tonnage of 2,288,765 were privately owned, and 7 of 44,513 gross tons were government owned. In foreign commerce, 111 tankers of 751,994 gross tons were engaged, all of which with the exception of one craft of 7,045 tons was privately owned. In the coastwise trade 218 tankers of 1,397,115 tons were engaged, all but one of which of 629 tons was privately owned.

the south. Capital and principal city, Bangkok. AREA, POPULATION, ETC. The area is estimated at 200,148 square miles and the population, according to the census of 1919-20, 9,207,355; estimated in 1925-26, 9,831,000. Buddhism is the prevailing religion. On Mar. 31, 1926, there were 16,185 Buddhist temples and 129,206 priests. On Mar. 31, 1925, government schools numbered 343, including 236 secondary depart-

UNITED STATES SHIPPING BOARD SUMMARY OF THE EMPLOYMENT OF AMERICAN STEAM AND MOTOR MERCHANT VESSELS OF 1000 GROSS TONS AND OVER DECEMBER 31, 1928
[Does not include Lake or River Tonnage]

Services	Passenger and combination		General cargo		Tankers		Total	
	Number	Gross tons	Number	Gross tons	Number	Gross tons	Number	Gross tons
Privately Owned:								
Nearby Foreign ^a	36	159,359	57	178,991	76	526,656	169	865,006
Overseas Foreign	32	346,294	168	929,810	34	213,293	234	1,493,897
Coastwise	89	458,913	408	1,640,586	217	1,390,820	714	3,490,319
Laid-up Vessels	29	111,718	106	337,870	27	152,996	162	602,584
Total Privately Owned .	186	1,076,284	739	3,086,757	354	2,288,765	1,279	6,451,806
Government Owned:								
Nearby Foreign	2 ^b	19,244	1	4,828	..	....	3	24,072
Overseas Foreign	11	187,871	245 ^c	1,422,551	1	7,045	257	1,617,467
Coastwise .....	..	....	..	....	1	6,295	1	6,295
Government Service .....	..	....	2	7,255	..	....	2	7,255
Laid-up Vessels	2	37,738	442 ^c	2,144,756	5	81,173	449	2,213,662
Total Government Owned	15	244,848	690	3,579,390	7	44,513	712	3,868,751
Total American Fleet	201	1,321,132	1,429	6,666,147	361	2,333,273	1,991	10,320,557

^a Nearby includes, Canada, Mexico, Central America, West Indies, and North Coast of South America to and including the Guianas.

^b Panama R. R. Vessels.

^c Includes 2 Panama R. R. Vessels.

SHIPWORM. See ZOÖLOGY, under *Mollusca*.
SHIPWRECKS. See SAFETY AT SEA.

SHOES, SHOE INDUSTRY. See BOOTS AND SHOES.

SHOOTING. The international rifle matches of 1928 were held in Holland, the Swiss team capturing the team title, with Sweden second and the United States third. The world's .22-calibre team honors went to the United States, Great Britain finishing second. The individual championship was won by Olle Eriksson of Sweden with Reich of Switzerland second. See OLYMPIC GAMES.

Three thousand competitors participated in the United States national tournament at Camp Perry, Ohio. The individual title went to Carl Cagle of the U. S. Marine Corps with a score of 286 out of a possible 300. Sergeant H. R. King of the Marines captured the President's match with 146 out of 150. The national team honors were won by the Marine Corps. The United States riflemen defeated a Cuban team in the Palma Trophy competition by a score of 1731 to 1696.

Trapshooting retained its popularity throughout the United States during 1928, with the Grand American Handicap tournament furnishing the high light of the season. The winners of the various events were: handicap, Ike Andrews, Spartanburg, S. C.; champion of champions, C. R. Brand, Chicago; professional, Earl Donohue, Ottumwa, Iowa; North American, Mark Arie, Champaign, Ill.; women's national, Miss Kitty Boyer, Mt. Carmel, Pa.; doubles, Class A, Frank Troeh, Portland, Ore.

SIAM, si-ám'. A monarchy in southeastern Asia, bounded by Burma on the west, French Indo-China on the east, and the Gulf of Siam on

ments, with 47,268 pupils and 1958 teachers. There were also 65 special (technical) departments in government schools with 1101 pupils, principally for the training of teachers. Local schools numbered 4707, with 527,603 pupils and 9872 teachers. Private schools numbered 573, with 27,435 pupils and 1446 teachers. Over 90 per cent of the local schools and 60 per cent of the government schools are situated in temples. There is a university at Bangkok.

PRODUCTION. The principal occupation of the people is agriculture, and the chief article of production as well as of export is rice. The area under rice in 1925-26 was 4,076,900 acres and the yield 2,209,900 tons. The livestock on Mar. 31, 1926, consisted of 8389 elephants, 247,158 horses and ponies, 4,013,882 bullocks, and 4,216,127 buffaloes. The forest resources are extensive and teakwood is an important product, the exploitation of which is almost entirely in the hands of the British. The mineral resources are varied and extensive and include coal, zinc, tin, iron, tungsten, wolfram, manganese, and antimony. The output of metallic tin in 1925-26 was 7885 tons.

COMMERCE. For the fiscal year ended Mar. 31, 1928, the foreign trade of Bangkok, through which 85 per cent of Siam's trade passes, exceeded all previous records. Exports valued at 234,000,000 ticals (\$105,300,000), registered an increase of 37,000,000 ticals (\$16,650,000), or 18 per cent over shipments of the fiscal year 1926-27, and imports, valued at 178,500,000 ticals (\$80,325,000), advanced 3,500,000 ticals (\$1,575,000). For the previous five years the export trade averaged 176,000,000 ticals (\$79,200,000) in value and the import, 152,000,000

ticals (\$68,400,000). The advance in export trade was attributed entirely to the large export crop of rice, while the increase in imports reflected the steady increase in buying of general merchandise which has characterized the import market of Bangkok since 1922.

FINANCE. The budget for 1927-28 provided revenues of 108,668,000 ticals and expenditures of 108,134,000 ticals. The public debt of Siam on Mar. 31, 1927, was \$58,972,000. A bill was passed by the Siamese Government in May, 1928, introducing the baht, a new currency unit having the same value as the tical which it replaces. The change was made, it was said, because of the foreign origin of the word "tical." The baht is divided into 100 satangs. Like the tical, the baht is a silver coin; so also are the 50- and 25-satang pieces. The 10- and 5-satang pieces will be nickel and the single satang, bronze. Notes and baht coins were to be legal tender without limit as to amount; 50- and 25-satang pieces would be legal tender up to five baht and the lesser coins up to one baht. The baht is equivalent to 0.66567 grams of fine gold. Gold parity is maintained by a regulation which places the minister under an obligation to receive and deliver gold or gold exchange in exchange for legal tender money at rates corresponding with the gold parity, after allowing for transport charges.

COMMUNICATIONS. In 1926-27, 1042 vessels of 1,131,105 tons entered and 1041 of 1,127,984 tons cleared the port of Bangkok. In 1927 there were 1701 miles of railway in operation. The railroads in that year carried 6,095,000 passengers, 1,113,000 long tons of freight, and had gross receipts of 16,857,000 ticals.

GOVERNMENT. Executive power is vested in the King, who is assisted by a consultative Ministry comprising nearly all the king's relatives; and legislative power in a council composed of the State Ministers and members appointed by the Crown. King in 1928, Prajadhipok, born Nov. 8, 1893, succeeded to the throne on the death of his brother, Rama VI, on Nov. 26, 1925.

SIBERIA. The northern Asiatic part of Russia. Area, estimated in 1926 at over 5,000,000 square miles; population in 1924 estimated at 12,800,000. Rich and important as were the mining, forest, and fur resources of Siberia, 90 per cent of the population lived in rural districts, and the most important productive activities were agriculture and the industries allied with it. This condition was likely to persist for many years, as it would take much capital not yet available, and a long period of time, to develop Siberia industrially. Siberia is one of the world's important sources of furs, and trapping is of considerable economic importance over large portions of the country, particularly in the forest and tundra region. The development of the mineral wealth of Siberia is second in importance only to the development of its agriculture. The industries of Siberia include flour mills, distilleries, breweries, tanneries, and soap and tallow works. In 1927, the acreage of crops in Siberia was estimated at 7 per cent above that in pre-war times, and of that acreage wheat occupied over 50 per cent, as against 35 per cent in 1923. Livestock was increasing in numbers, with horses nearly as numerous as in pre-war times, cattle 20 per cent more numer-

ous, and sheep and goats twice as numerous. The gross value of the industrial output had increased by 100,000,000 rubles (gold) in two years. The trade turnover was nearing the 1,000,000,000-ruble mark, whereas two years previously it aggregated only 500,000,000 rubles. In its plans for the development of Siberia, the Soviet Government gave first place to the basic industries, such as coal and gold mining and metallurgical work, and second place to the more profitable of other industries, such as wood-working, paper, glass, pottery, and the production of agricultural implements. See *RUSSIA*.

SIEMENS, ALEXANDER. British engineer, died at London, February 16. He was born at Hanover, Germany, Jan. 22, 1847. He was a member of a well-known German family of engineers. In 1867 he went to England to work in the shops of Siemens Brothers at Woolwich, and in 1868 went to Persia to assist in the building of the Indo-European telegraph line. He had a part in the laying of the cable under the Black Sea in the following year. He was recalled to Germany to serve in the Franco-Prussian War, in which he was wounded. Returning to England he became a pupil of the late Sir William Siemens, and was engaged in building regenerating gas furnaces in various countries, including Canada and the United States, and in laying submarine cables, 1875-78. In the latter year he became a naturalized British subject. In 1879 he took over the management of the electric light department of Siemens Brothers, and after the death of Sir William Siemens in 1883 assumed a prominent position in the firm, ultimately becoming chief permanent director resident in England. He was honored by British engineers with the presidency of the Institute of Electrical Engineers, 1894 and 1904, and that of the Institute of Civil Engineers, 1910-11. He wrote many papers, on scientific and technical subjects, that were read before professional societies.

SIERRA LEONE, sê-ër'ra lê-ô'nê. A British colony and protectorate on the west coast of Africa; bounded by French Guinea on the north and Liberia on the east and southeast. The approximate area of the colony is 4000 square miles and the population, according to the census of 1921, 85,163, of whom 1161 were Europeans. The chief city is Freetown, with a population in 1921 of 44,142. The birth rate in 1926 was 24 per thousand and the death rate 27.9 per thousand, infant mortality being 296 per 1000 registered births. Freetown is the chief seaport in West Africa, being a coaling station and the headquarters of the British Imperial forces in West Africa. Vessels entered and cleared in the foreign trade in 1926 had a tonnage of 4,058,059. The total exports in 1926 amounted to £1,713,646; imports £1,844,122; revenue (1926), £855,440; expenditure, £957,155; public debt, £1,729,848. The total railway mileage open to traffic, with sidings, was 356 miles. The receipts from all sources for 1926 amounted to £228,527; expenditures, £184,288.

The protectorate is situated between 6° and 10° N. latitude and 10° and 14° W. longitude, and its greatest extension inland is 180 miles. Area, 27,000 square miles; population, according to the census of 1921, 1,456,148, of whom 1,450,903 were natives. The chief exports are palm kernels, kola nuts, and palm oil. It is

divided into three provinces, with a European commissioner at the head of each. The governor and commander-in-chief of the colony is also governor of the protectorate. He is assisted by an executive and legislative council. Governor and Commander-in-chief in 1928, Brig. Gen. Sir J. A. Byrne.

SIGNALS, RAILWAY. See RAILWAYS.

SILESIA, si-lé'shā. The term applied to (1) a division of the former Austro-Hungarian Empire; (2) a province of Prussia. The former, previously a crownland of Austria, became after the War a part of the new Republic of Czechoslovakia (see CZECHOSLOVAKIA). Its area is 1708 square miles; population, according to the census of 1921, 672,268. The Province of Silesia in Prussia was originally the largest division of that State, with an area of 15,573 square miles and a population of 5,225,962 in 1910. After a plebiscite in 1921, Upper Silesia was

established and arrangements were made for a definite basis for the various transactions. Future contracts formed an important feature of the business of the silk exchange and it was believed that the industry would be stabilized through the facilities thus provided.

In the United States, the silk industry continued on rather an even basis during the year with but slight variation in the activity of machinery and production with declines registered in both respects toward the end. While the usual decline occurred during the year, it was rather less than in 1926 and 1927, and indicated stability of values. In the broad-loom industry, conditions, continued on an even basis throughout the year, with a quieter demand at the close. It was realized that the silk industry required adjustment due to the increasing use of rayon which had attained even greater popularity in 1928 than in the previous year.

[WORLD RAW-SILK PRODUCTION, INCLUDING TUSSAH SILK
(Compiled by the Statistical Bureau of the Silk Association of America)]

	1927-28 Pounds	1926-27 Pounds	1925-26 Pounds	1924-25 Pounds	1923-24 Pounds
Europe		9,215,000	10,449,000	12,533,000	11,519,000
Italy	10,636,000	8,499,000	9,656,000	11,585,000	10,803,000
France	9,810,000	529,000	573,000	739,000	562,000
Spain	176,000	187,000	220,000	209,000	154,000
Levant	2,425,000	2,359,000	2,524,000	1,984,000	1,676,000
Asia: Total quantity exported ^a	88,320,000	84,337,000	72,874,000	69,631,000	53,015,000
China, Shanghai	11,436,000 ^b	10,825,000 ^b	10,394,000 ^b	8,817,000 ^b	8,697,000 ^b
China, Canton	5,820,000	7,055,000	5,802,000	6,550,000	6,018,000
Japan	70,767,000	66,193,000	56,978,000	54,064,000	38,100,000
India	297,000	264,000	200,000	200,000	200,000
Total, pounds	101,381,000	95,911,000	85,847,000	84,148,000	66,210,000
Tussah	800,000	1,400,000	2,205,000	1,712,000	990,000
Grand total, pounds	102,181,000	97,311,000	88,052,000	85,860,000	67,200,000

^a The production of raw silk in China is an unknown quantity, therefore expert figures have been used.

^b Excludes tussah silk.

The domestic consumption of raw silk (including tussah) in China is estimated to be 52 per cent of the production. The exports from Canton and Shanghai during the season 1927-28 were 18,000,000 which would indicate a crop of approximately 41,000,000 pounds. The Japan crop was estimated at 80,000,000 pounds.

divided between Germany and Poland, leaving under the control of Prussia an area of 14,022 square miles (Upper and Lower Silesia), with a population in 1925 of 4,504,103; and transferring to Poland an area of 1240 square miles, with a population of 891,669 in 1921.

SILK. The raw-silk industry in 1928 was on the whole prosperous, with stable conditions prevailing in Japan, China, and Italy and increased consumption in the American market to which is exported a large portion of the silk produced in Asia. In Japan, the reellers experienced a prosperous year and higher prices were obtained in many cases for their product. An American technical committee visited Japan during the spring and was in conference with representatives of Japanese silk organizations and firms regarding raw-silk classification. At these conferences, an analysis was made of the problems confronting the industry and plans were inaugurated for an international raw-silk conference to be held in the United States during 1929. On September 11, a national Raw-Silk Exchange was opened in New York and functioned satisfactorily throughout the year. This exchange was able to create a recognized price basis and formed a connecting link between the supply market in Japan and the consumer in the United States. A grading and warehousing committee, as well as an inspection bureau, was

During the calendar year 1928, the Silk Association of America reported total imports of raw silk amounting to 566,378 bales and deliveries of 571,010 bales, as against imports of 552,441 bales, and deliveries of 551,379 bales in 1927, and imports of 504,200 bales and deliveries of 501,546 bales in 1926. On Jan. 1, 1928, there were reported in storage 53,540 bales and at the end of December, 408,908 bales. The raw silk imported in 1928, according to the Department of Commerce, was valued at \$367,997,250 as against \$390,365,475 in 1927, there being an increase in quantity as noted above, and a decrease in value. Silk was the largest single import into the United States in 1928 and in ten years had increased approximately 121 per cent. Silk imports in 1928 were distributed as follows: France, 40,081 pounds, valued at \$243,043; Italy, 792,231 pounds, valued at \$3,599,571 (an increase from \$2,715,961 in 1927); China and Hongkong, 10,527,407 pounds, valued at \$45,948,666 (a decrease from \$49,774,659 in 1927); Japan, 64,111,650 pounds, valued at \$318,123,930 (a decrease from \$334,160,383 in 1927); and other countries, 17,946 pounds, valued at \$81,680.

See TEXTILE INDUSTRY.

SILK, ARTIFICIAL. See RAYON.

SILVER. The United States Bureau of the Mint, with the cooperation of the United States Bureau of Mines, prepared a statement based

WORLD PRODUCTION OF SILVER, 1927
 [The production figures given below are based upon
 data published in the report of the Director of
 the U. S. Mint]

Country	Kilos, fine	Ounces, fine	Value (\$0.5707 Per ounce) ^a
North America:			
United States	1,878,513	60,394,199	\$34,466,969
Canada	708,364	22,613,134	12,905,315
Mexico	3,252,688	104,573,919	59,680,336
Total	5,834,565	187,581,252	\$107,052,620
Central America and West In- dies ^b	98,103	3,154,021	\$1,800,000
South America:			
Argentina	467	15,000	\$ 8,560
Bolivia	168,051	5,402,840	3,083,401
Brazil	622	20,000 ^c	11,414
Chile	90,202	2,900,000 ^c	1,655,030
Colombia	4,088	131,417	75,000 ^c
Ecuador	2,725	87,601	49,994
Guiana	249	8,000 ^c	4,566
Peru	569,064	18,295,408	10,441,189
Venezuela	100 ^c	3,215	1,835
Total	835,568	26,863,481	\$15,330,889
Europe:			
Austria	801	9,677	\$ 5,523
Czechoslovakia	23,328	750,000 ^c	428,025
France	9,600	308,640	176,141
Germany	171,073	5,500,000 ^c	3,138,850
Great Britain	7,453	46,714	26,660
Greece	7,500	241,125	137,610
Italy	16,706	537,098	306,522
Norway	10,010 ^f	321,821	183,663
Rumania	4,376	140,688	80,291
Russia	10,000 ^c	321,500	183,480
Spain	95,072	3,056,565	1,744,382
Sweden	2,500 ^c	80,375	45,870
Turkey	7,000 ^c	225,050	128,438
Yugoslavia	1,672	53,755	30,676
Total	360,591	11,593,008	\$6,616,131
Asia:			
British India	187,397	6,024,806	\$3,438,357
China	3,110	100,000 ^c	57,070
Chosen (Korea)	1,617	52,000 ^c	29,676
East Indies—			
Dutch	71,098	2,285,801	1,304,507
Indo-China	316	10,159	5,798
Japan	149,300	4,800,000 ^c	2,739,360
Philippine Is- lands	882	28,356	16,183
Taiwan	467	15,000 ^c	8,560
Total	414,187	13,316,122	\$7,599,511
Oceanic:			
Australia—			
New South Wales	186,791	6,005,341 ^c	\$3,427,248
Queensland	2,616	84,118	48,006
South Australia	5	179	102
Victoria	46	1,471	839
West Australia	1,552	49,895	28,475
Tasmania	23,073	741,782	423,335
Papua	140	4,494	2,565
New Zealand	13,293	427,358 ^d	243,893
Total	227,516	7,314,638	\$4,174,463
Africa:			
Algeria	3,673	118,087	\$67,392
Belgian Congo	330	10,609	6,054
Bechuanaland	13	418	238
Portuguese East Africa	21	682	389
Rhodesia—			
Northern	571	18,344	10,469
Southern	3,522	113,241	64,627
Tanganyika	28	916	523
Transvaal, Cape Colony, and Natal	31,469	1,011,736	577,398
Total	39,827	1,274,033	\$727,090
Total for world	7,810,157	251,096,555	\$143,300,804

^a Average price per fine ounce in London.

^b Estimate based on United States imports of ore and bullion.

^c Estimate based on other years' production.

^d Amount exported.

^e Previous year's figures.

^f For year ending June 30, 1927.

on a preliminary estimate of refinery production of silver in the United States during the calendar year 1928 tabulated as follows:

States	Ounces	Value ^a
Alaska	463,423	\$ 271,103
Arizona	6,346,744	3,712,845
California	1,409,525	824,572
Colorado	3,973,410	2,324,445
Georgia	4	2
Idaho	8,877,857	5,193,546
Illinois	2,616	1,530
Michigan	4,349	2,544
Missouri	151,736	88,766
Montana	10,001,981	5,851,159
Nevada	5,391,732	3,154,163
New Mexico	799,414	467,657
North Carolina	3	2
Oregon	28,234	16,517
Pennsylvania	6,724	3,934
South Carolina	4	2
South Dakota	89,634	52,436
Tennessee	94,987	55,567
Texas	1,391,295	813,908
Utah	16,855,729	9,860,601
Washington	94,495	55,280
Wyoming	13	8
Philippine Islands	36,359	21,270
Totals	56,020,268	\$32,771,857

^a Value at 58.5¢ per ounce, the average New York price of bar silver.

The preliminary estimate indicated a reduction in silver output, as compared with 1927, which was 4,414,173 ounces. In the year of largest output, 1915, there were produced 74,961,075 ounces of silver.

The average price of silver in New York in 1928 was 53.17¢ cents an ounce, as compared with 56.370 cents in 1927, 62.107 cents in 1926, and 69.065 cents in 1925, the year before the Indian Currency Commission decided to put India on a gold currency basis and sell over a period of years 700,000,000 ounces of silver in order to obtain the gold necessary to carry out the scheme. Naturally, the effect was to depress the value of silver as India had absorbed some 30 per cent of the annual production of the world. This plan later was modified and China engaged in extensive buying, though it was uncertain whether the Republic, as a result of the researches of the Kemmerer Commission seeking to develop the stabilization of Chinese currency, might not adopt for that country also the gold standard. On the other hand, the tendency continued during the year 1928 toward the increased use of silver in many of the industrial arts.

During 1928, the United States exported silver valued at \$87,382,000, as compared with \$75,625,000 in 1927 and \$92,258,000 in 1926. Imports of silver into the United States were as follows: 1928, \$68,117,000; 1927, \$55,074,000; and 1926, \$69,596,000.

SIMMONS COLLEGE. A non-sectarian college for women at Boston, Mass., founded in 1899. The enrollment on Nov. 1, 1928, was 1459, distributed among the following schools: Household economics, 277; secretarial studies, 493; library science, 212; general science, 76; social work, 161; Prince School of Store Service Education, 64; public health nursing, 176; students in economic research, 3. There was an enrollment of 265 in the summer session. The faculty numbered 130, including 3 on leave of absence. The productive funds of the institution amount-

ed to \$3,290,296, and the income for the year was \$495,416. The library contained 44,000 volumes. The president was Henry Lefavour, Ph.D., LL.D.

SIMON COMMISSION. See INDIA, under *History*.

SIMS, CHARLES. English artist, died at St. Boswells, Scotland, April 13. He was born at Islington, London, in 1873. At the age of fourteen he entered the employ of a commission agent at Paris, but at seventeen turned to art as a career. He studied at the National Art Training School, at South Kensington, London, but a year later he was again in Paris, as a student at the Académie Julian, under Constant and Lefebvre. He studied at the Royal Academy schools, also, and won exhibit space at the Academy in 1894, when he was only twenty-one. From that time until 1926 he was closely associated with the Academy, first as an associate academician in 1908, then as academician in 1915, and as keeper, 1920-26. In the meantime the merit of his work—which is marked by poetical invention, charming color, and fine craftsmanship if not by greatness in design—had won international recognition as well as fame at home. He is represented in the Tate Gallery by *The Fountain* and *The Wood Beyond the World*, a work of poetic fancy; and his paintings hang in the Municipal Gallery at Leeds, England, and in several other galleries in the British Dominions. His *Childhood* is in the Musée de Luxembourg, Paris. He received a gold medal at the international exhibition at Amsterdam in 1912, and another at the Carnegie Institute of Pittsburgh, Pa., in the same year.

SINGAPORE. See STRAITS SETTLEMENTS.

SINGING. See MUSIC.

SINHA, LORD (SATYENDRA PRASSANO SINHA, FIRST BARON SINHA OF RAIPUR). Indian lawyer and statesman, died March 16. He was born Mar. 24, 1864. He was educated at Birbhoom Zilla School, and subsequently at the Presidency College, Calcutta, where he was a scholar. In 1881 he went to England, read law at Lincoln's Inn, and was called to the bar in 1886. He practiced as a barrister at Calcutta, in the High Court, before becoming standing counsel for the Government of India in 1903. He was advocate general of Bengal, 1907-09, and again 1915-17; a representative of India in the imperial War conference of 1917, and a member of the imperial War cabinet in 1918; under-Secretary of State for India, 1919-20, and Governor of Bihar and Orissa, 1920-21. He was the first native to become a member of the council of the Viceroy of India, of the British House of Lords and of a British Ministry, and he was highly esteemed in England for his unwavering loyalty to the Crown, especially in the days of the World War. In 1914 he was knighted, in 1918 he was made a King's Counsel, and in 1919 he was raised to the peerage and admitted to the Privy Council. He was invested with the rank of Knight Commander of the Order of the Star of India in 1921 and in 1926 he became a member of the judicial committee of the Privy Council.

SIX COLLECTION. See ART SALES.

SKATING. The most important ice-skating competitions of 1928 were those held in connection with the Olympic Games (q.v.), in which the European contestants carried off practically

every championship. Irving Jaffe of New York had won the 10,000-meter race, apparently, but the officials cancelled the event because of the soggy condition of the ice. The International Skating Federation ruled that this race must be run over, but there was no opportunity to have this done. Clas Thunberg of Finland won the 1500-meter title, while Ivar Ballengrud of Norway took the 5000-meter championship. Thunberg and Bernt Evensen of Norway tied in the 500-meter race and established a new record of 43 $\frac{3}{4}$ seconds. The figure-skating honors went to Gillis Grafstrom of Sweden in the men's competition and Sonja Henie of Norway took the women's title.

In the United States championships, Allan Potts of Brooklyn won the national indoor crown and Miss Elsie Muller of New York successfully defended her woman's laurels. Roger F. Turner of Boston won the men's national figure-skating title, Miss Maribel Vinson triumphing in the women's contest. Percy H. Hohnston of Cleveland, Ohio, established a new amateur record of 2 minutes, $\frac{2}{5}$ seconds, for three-quarters of a mile indoors. Loretta Neitzel of Detroit covered 100 yards in 11 $\frac{3}{5}$ seconds and one-sixth of a mile in 23 $\frac{3}{5}$ seconds, both being new marks. Irving Jaffe skated one mile in 2 minutes, 30 $\frac{3}{5}$ seconds, for a new record at Oslo, Norway.

SKINNER, CHARLES RUFUS. American educator, died at Pelham Manor, N. Y., June 30. He was born at Union Square, N. Y., Aug. 4, 1844. He was educated at the Mexico (N. Y.) Academy and the Clinton Liberal Institute. He was a member of the New York State Assembly (1877-81) and of the National House of Representatives (1881-85). From 1895 to 1904 he was New York State Superintendent of Public Instruction, having been previously deputy superintendent for six years. As head of the schools of the State, he advocated the restriction of the use of public money to elementary schools, leaving institutions of higher education to private enterprise and endowment. He was assistant appraiser of the Port of New York, 1906-11; librarian of the New York Assembly, 1914, and legislative librarian at Albany, N. Y., 1915-25, retiring in that year. He wrote: *New York Question Book* (1890); *Manual of Patriotism for the Schools of New York* (1900); *The Bright Side* (1909).

SKOULLOUDIS, STEPHANOS. Greek statesman, died at Athens, August 20. He was born on the Turkish island of Chios, 1838, and after studying law at the University of Athens, he managed his father's banking business at Constantinople. Having been a member of the revolutionary committee of Crete, 1867, he later used his influence toward freeing the island from the domination of the Turks. He moved to Greece, 1879, and entered Parliament; he was appointed Minister to Spain four years later, and in 1892 he was made minister of marine, and also of education. After serving as Foreign Minister from 1897, he retired in 1906, but, urged by Premier Venizelos, he consented to represent Greece at the London Conference, at the end of the Balkan War. Skouloudis was made Prime Minister in 1915, and during his year of service he held his country to strict neutrality, refusing to allow either Allied or German troops to pass through Greek territory. He and the members

of his cabinet were accused by Venizelos of plotting a revolt in behalf of the former King Constantin, but they were acquitted by the National Assembly after being tried before a special high court, 1818-20. Refusing to reënter political life, Skouloudis, after 1921, devoted himself to the study of history and politics.

SLANG. See PHILOLOGY, MODERN.

SLATE. The slate quarries of the United States, according to the U. S. Bureau of Mines, produced in 1928 slate valued at \$10,551,000, as against a production valued at \$11,380,736 in 1927, a decline of 7 per cent. The decrease in output held in most of the different branches of the industry, roofing slate estimated at 430,000 squares, valued at \$4,473,000, decreasing 8 per cent in quantity and 10 per cent in value. The total sales of mill stock, estimated at 8,860,000 square feet, valued at \$3,430,000, decreased 5 per cent in quantity and 3 per cent in value. Mill stock for structural slate—2,483,000 square feet, valued at \$1,044,000—increased 3 per cent in quantity and 11 per cent in value, but electrical slate—1,230,000 square feet, valued at \$1,008,600—decreased 13 per cent in both quantity and value. Mill stock for blackboards and bulletin boards—3,375,000 square feet, valued at \$1,103,000—decreased 10 per cent in quantity and 1 per cent in value in 1928. Slate for school slates—1,833,000 pieces (975,000 square feet), valued at \$22,200—increased 26 per cent in quantity and 11 per cent in value. Slate for billiard-table tops—380,000 square feet, valued at \$134,200—decreased 6 per cent in quantity and 5 per cent in value. Slate for vaults and covers—417,000 square feet, valued at \$118,000—decreased 21 per cent in quantity and 16 per cent in value. The sales of crushed slate for roofing granules and flour in 1928 were estimated at 413,000 short tons, valued at \$2,474,000. This represented a decrease of 10 per cent in quantity and 11 per cent in value. There was apparently a considerable increase in the quantity of slate sold for flagging, cross-walks, stepping-stones, etc.

SLAVIC LANGUAGES AND LITERATURE. See PHILOLOGY, MODERN.

SLEEPING SICKNESS (ENCEPHALITIS). The movement of epidemic encephalitis or sleeping sickness (which is not to be confused with African sleeping sickness) was given in the July number of the monthly reports of the epidemiology of the world which are issued by the League of Nations. In England the disease first appeared in 1918 but did not assume epidemic behavior until the winter of 1920-21. There was a second cumulation of cases in the winter of 1923 and a third in the spring of 1924 which was quite severe. Since then there had been a slow recession. In Sweden there were epidemics in 1920-21 and 1923; after which all suggestion of epidemic incidence was missing. Switzerland presented three epidemics in 1920, 1921, and 1923, but since then the incidence had been purely endemic and slight. Italy showed a severe epidemic in 1920 and mild ones in 1924 and 1925. Other countries were not mentioned specifically, but the rule was that epidemic has given way to endemic incidence. Under present conditions, although notification is compulsory, it is largely disregarded. This is aggravated by the difficulty in recognizing mild cases which escape notification for that reason. On the other hand many cases sent to hospitals

as encephalitis prove to be something else—in Glasgow for example 30 per cent of diagnoses proved erroneous.

SLOANE, slōn, WILLIAM MILLIGAN. American historian and university professor, died at Bayhead, N. J., September 11. He was born in Richmond, Ohio, Nov. 12, 1850, and in 1868 was graduated from Columbia College. After teaching the classics for four years at the Newell School in Pittsburgh, he went to Germany, as private secretary to the historian, George Bancroft, who was at that time the United States Minister to Berlin. While abroad Sloane studied history under Mommsen and Droysen, and in 1876 he received a Ph.D. from the University of Leipzig. On his return to America in the same year, he joined the Princeton faculty as professor of history. He taught at Princeton for twenty years, becoming a full professor in 1883, and editing the *Princeton Review* from 1886 until 1889. In 1896 he resigned his position to accept a professorship of history at Columbia, which he held until 1916, when he retired and was made professor emeritus. He had received the degree of L.H.D. from Columbia in 1897 and in the year he left Princeton that university honored him with the A.M. In 1911 Professor Sloane was elected president of the American Historical Society, and he was at one time president of the National Institute of Arts and Letters. He was an energetic charter member of the American Academy of Arts and Letters, and in 1920 he succeeded William Dean Howells as its president.

Professor Sloane's active and creditable work as author and teacher was recognized by Rutgers in 1898, and by Princeton in 1903, receiving from both institutions the LL.D. degree. He also was made an officer of the French Legion of Honor and of the Swedish North Star. The most widely known of his writings is *The Life of Napoleon Bonaparte* (4 vols., 1896; rev. and enlarged ed., 1911). Other of his works include: *Life and Work of James Kenneth Wilson Sloane* (1888); *The French War and the Revolution* (1893); *Life of James McCosh* (1896); *The French Revolution and Religious Reform* (1901); *Party Government in the United States of America* (1914); and *The Balkans* (1914); *The Powers and Aims of Western Democracy* (1919); and *Greater France in Morocco* (1924).

SMALL POX AND VACCINATION. POST-VACCINAL ENCEPHALITIS. Since this accident of vaccination was first observed in 1923 several official reports as to its incidence and nature have been made public, one of the latest being that of the Commission of the League of Nations, which may be found in the *British Medical Journal* for Sept. 29, 1928. The chief incidence has been in Holland and in Great Britain. As far as known not a single case has appeared in the Western Hemisphere while most of the Old World has enjoyed a like immunity. During 1923-27 there were 139 cases in Holland with 41 deaths, as a result of which the law enforcing the vaccination of children was temporarily suspended. In England and Wales there had been 87 cases with 47 deaths, divided between the years 1922-23 and 1926-27. Peculiar is the age incidence, for nearly all cases were in children between 3 and 13 at their first vaccination. Both infants and adults have thus far shown immunity. One might question its

identity with epidemic encephalitis (sleeping sickness); and while in Holland the opinion inclined to identity the reverse was the case in England where the differences were marked. The Commission did not accuse vaccine virus, but believed that the reaction to vaccination rouses some latent organism to activity.

SMART, GEORGE THOMAS. American educator, died at Noroton, Conn., March 13. He was born at Leicester, England, Sept. 21, 1863. He went to the United States in 1881, and in 1888 was ordained in the ministry of the Congregational Church. He served as pastor of churches at West Pawlet, Vt., West Rupert, Vt., Manchester, Vt., and Newton Highlands, Mass., 1888-1921. In the meantime he studied at Harvard University, and was graduated in 1895. From that year on, and after his retirement from the ministry in 1921, he lectured on philosophy, art, and English literature. He delivered lectures at the Andover Theological Seminary and at the Middlebury School of English, 1921. In 1923-24 he traveled abroad, devoting himself to the study of art, and on his return to the United States in 1925 he became acting president of Wheaton College, at Norton, Mass. Dr. Smart, on whom Middlebury College conferred the degree of D.D. in 1900, wrote: *Studies in Conduct* (1905); *The Mystery of Peace* (1909); *The Golden Bond* (1909); *If I Should Meet the Master* (1910); *The Tempter of the American People* (1912).

SMETLING. See METALLURGY.

SMITH, ALEXANDER. Canadian Liberal leader and lawyer, died at Ottawa, Ont., October 17. He was born at Saugeen, Ont., in 1866, and was graduated with honors from the University of Toronto, in 1889. He worked on newspapers and taught school for a time, and he was called to the bar in 1893. Practicing at Toronto and Ottawa, he specialized in parliamentary and departmental agency business. He served as secretary of the Ontario Liberal Association, 1893-1903, and his political activity overshadowed his professional work. He so initiated and developed the organization of the Liberal party in Ontario, as to make it a factor in both Federal and provincial politics. After the Liberals had gained control of the Ontario legislation, and had succeeded in the general election throughout the Dominion in 1904, Mr. Smith devoted himself to law practice in Ottawa.

SMITH, EDGAR FAHS. American chemist and educator, died at Philadelphia, Pa., May 3. He was born at York, Pa., May 23, 1856. He was graduated from Pennsylvania College in 1874 with the degree of B.S., and studied at Göttingen for two years. After serving as instructor in chemistry at the University of Pennsylvania and as professor at Muhlenberg and Wittenberg colleges, he became professor of chemistry at the University of Pennsylvania, and he retained his connection with the institution until his death. From 1899 to 1911 he was vice provost, and was provost from 1911 to 1920, when he retired from active duty, as provost and Blanchard professor of chemistry. He was made professor emeritus of chemistry.

Many honors were awarded to Dr. Smith in recognition of his important original contributions to chemistry, especially in the domain of the use of electrolytic methods for analysis and for determinations of atomic weights. Among his distinctions were membership in the Na-

tional Academy of Sciences and the presidency of the American Philosophical Society and of the American Chemical Society. He was also vice president of the American Association for the Advancement of Science, a member of the Society of the Chemical Industry, and honorary member of the American Electrochemical Society, the Société de Chimie Industrielle de France, and the Chemical, Mining, and Metallurgical Society of South Africa. More than sixteen universities of the United States, Canada, and Europe conferred honorary degrees on Dr. Smith, and he received the Elliott Cresson Medal from the Franklin Institute, the Chandler Medal from Columbia University, and the Priestly Medal from the American Chemical Society. He was made an officer of the Legion of Honor of France in 1923.

In addition to his professional and educational activities, Dr. Smith engaged in public duties. He was a member of the jury of award at the World's Columbian Exposition, Chicago, 1893; a member of the United States Assay Commission, 1895; adviser in chemistry to the Carnegie Institute, 1902; trustee of the Carnegie Foundation, 1914-20; member of the board of technical advisers of the Washington disarmament conference, and member of the electoral college from Pennsylvania. He was beloved by his students, and a leader in movements for their benefit. Dr. Smith was the author or editor of a long list of books dealing with chemistry and electrochemistry and the history of the sciences, including translations of Richter's textbooks on inorganic and organic chemistry. Among his books may be mentioned: *Electro-Chemical Analysis* (5th ed., 1911); *Theories of Chemistry* (1913); *Elements of Electro-Chemistry* (1913); *Chemistry in America* (1914).

SMITH, JAMES FRANCIS. American jurist and public official, died at Washington, June 29. He was born at San Francisco, Calif., Jan. 28, 1859, and was graduated from Santa Clara College, 1878. He then studied law at the Hastings Law School and was admitted to the bar of California in 1881. In April, 1898, on the outbreak of the Spanish-American War, he became colonel of the First California Regiment, United States Volunteers, and in June of the same year went to the Philippines with his men. He served throughout the fighting with the Spaniards and with the Filipinos under Aguinaldo, and was commended for gallantry. He was promoted to brigadier general, United States Volunteers, Apr. 24, 1899, with command of the Department of Visayas. In July, 1899, he became Military Governor of the Island of Negros, and in October, 1900, was placed in charge of the collection of customs of the entire Philippine Archipelago. He left the military service in 1901 to become associate justice of the Supreme Court of the islands, and on Jan. 1, 1903, became a member of the Philippine Commission and Secretary of Public Instruction, serving in those offices until Sept. 20, 1906, when he was appointed Governor-General of the Philippines. In 1909, after ten years of military and civil service in the islands, he resigned as governor-general. In the following year he was appointed associate judge of the United States Court of Appeals, at Washington, D. C., and he served there until his death.

SMITH COLLEGE. A non-sectarian college for women at Northampton, Mass., founded in

1871. The enrollment for the autumn of 1928 was 2103, including: 82 graduate students, 17 non-collegiate students, and 38 juniors studying in France. There were 227 faculty members. The productive funds amounted to \$5,127,523, and the income from the funds to \$288,357. The library contained 154,460 volumes. The William Allan Neilson Chair of Research, established in 1927, was occupied by Dr. Kurt Koffka, formerly professor of psychology at the University of Giesesen, who had 5 assistants. Among the accessions to the Museum of Art during the year were works by Géricault, Delacroix, and Courbet. The music department gave recitals of Handel's *Xerxes* and Monteverdi's *The Combat of Tancredi and Clorinda*, each for the first time in America. A revised curriculum was put into operation, requiring proof before the senior year of ability to read ordinary prose in two foreign languages; substituting for required courses the selection of work in each of four main fields of learning: and opening to freshmen courses in religion, psychology, philosophy, and government. President, William Allan Neilson, Ph.D., LL.D., L.H.D., Litt.D.

SMITHSONIAN INSTITUTION. An organization founded in 1846, according to the terms of the will of James Smithson of England, who, in 1826, bequeathed his property to the United States of America to "found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men." In receiving the property and accepting the trust, Congress determined that the Federal Government was without authority to administer the trust directly, and therefore constituted an "establishment" whose statutory members are the President, the Vice President, the Chief Justice, and the heads of the executive departments. The affairs of the Institution are administered by a Board of Regents, whose membership consists of the Vice President, the Chief Justice, three members of the Senate, and three members of the House of Representatives, together with six other persons, other than members of Congress, two to be residents of the City of Washington, and the other four of different States. The Chancellor of the Institution in 1928 was Chief Justice Taft.

The Institution administers the following government bureaus: The National Museum, the National Gallery of Art, the Bureau of American Ethnology, the International Exchange Service, the National Zoological Park, the Astrophysical Observatory, and the United States Regional Bureau of the International Catalogue of Scientific Literature. It also administers the Freer Gallery of Art.

The Institution's researches on the radiation of the sun, under the direction of Dr. C. G. Abbot, were continued during the year at the Astrophysical Observatory at Washington and at the field stations in California, Chile, and Southwest Africa. Many other researches in various phases of geology, biology, anthropology, and astrophysics were carried on under the direction of the Institution.

The institution and the governmental branches under its direction published during 1928 the usual large number of technical papers presenting the results of its researches in many branches of pure science, and there were issued 117 volumes and pamphlets, of which 183,196 copies

were distributed to libraries, educational institutions, and individuals. The unrestricted income of the Institution, averaging about \$65,000, is derived from interest on its endowment funds, which in 1928 amounted to a little over \$1,000,000. It is also charged by Congress with the disbursement of the government appropriations for the support of the bureaus under its administrative charge. Dr. C. G. Abbot was elected secretary on January 10, 1928, to succeed the late Dr. Charles D. Walcott. The assistant secretary was Dr. Alexander Wetmore.

SNUFF. See TOBACCO.

SOCCER. See FOOTBALL.

SOCIAL ECONOMICS. See CHILD LABOR; COÖPERATION; LABOR LEGISLATION; MATERNITY PROTECTION; MINIMUM WAGE; OLD-AGE PENSIONS; STRIKES AND LOCKOUTS; ETC.; also LITERATURE. ENGLISH AND AMERICAN.

SOCIAL INSURANCE. See MATERNITY PROTECTION; OLD-AGE PENSIONS; UNEMPLOYMENT; WELFARE WORK; WORKMEN'S COMPENSATION.

SOCIALISM. UNITED STATES. April saw the launching of the Socialist campaign for the Presidency with the nomination of Norman Thomas of New York for President and James H. Maurer of Pennsylvania for Vice President. The party's platform contained planks calling for the following: Public ownership of all natural resources and public utilities including oil wells, coal mines, power plants, railroads, and telegraph and telephone systems; governmental relief of unemployment by the extension of public works; a shorter work day; a child-labor amendment to the Constitution; the outlawry of war; disarmament; cancellation of war debts; recognition of Russia; withdrawal of marines from Nicaragua; membership in the League of Nations. The convention appealed to organized labor for its support and promised its coöperation to all political groups in sympathy with Socialist principles. Norman Thomas made a spirited campaign, trying to hold particularly those liberal votes that had been cast for La Follette in 1924. He appreciated that Smith was his chief difficulty with the result that he spent most of his time denying that a vote for him would be wasted because Smith's defeat was inevitable.

How true Mr. Thomas' prophecy was the election figures adequately demonstrated; though there can be no doubt that none the less many liberal votes went to Smith that would not have supported another Democratic candidate. The result was that only some 300,000 votes were cast for the Socialist ticket and one-third of these came from the voters of New York State. The Socialist vote was the smallest since 1900 when Eugene Debs polled 94,768 votes. In 1912 Mr. Debs had received 897,011 votes. In addition to the candidacy of Mr. Smith other factors in the small Socialist vote were: the smallness of the fund available for electioneering purposes; the difficulty in reconstruction of the party after the surrender of the standard to La Follette; the general prosperity of the country.

The Workers' (Communist) party, which met in convention May 27, for the purpose of choosing presidential and vice presidential candidates, issued a manifesto in which it declared "its aim was the overthrow of capitalism, the establishment of a workers' and farmers' government, the establishment of a communist society in which the means of production will not be

the property of the few. . . ." The party platform denounced the Republican, Democratic, and Socialist parties. Among other planks were to be found the following: abolition of the Senate; abolition of the Supreme Court and the veto power of the President; immediate recognition of Soviet Russia; a five-year moratorium on farm-mortgage debts; an income tax, graduated from \$5000, that was to confiscate all incomes above \$25,000; shorter hours of labor; a five-day week; repeal of immigration laws; Federal social insurance laws for sickness, accidents, unemployment, and old age; "abolition of the whole system of infamous imperialist peace treaties; cancellation of all debts of the last imperialist World War." William Z. Foster of Pennsylvania was nominated for the presidency and Benjamin Gitlow of New York was nominated for the vice presidency. In 1924, the Workers' party polled 36,386 votes. The 1928 vote was stated by the Associated Press as 48,228.

GREAT BRITAIN. The year saw the continuance of the split in the ranks of the British Labor party. During the summer, the extremists sought to win back British labor and in particular the Trades Union Congress to the Marxian doctrine of the class war and a manifesto signed by James Maxton of the Independent Labor party and A. J. Cook of the Miners' Federation issued a call for conferences to restate the Labor position. Their success was slight however. The extremists could not move the official Labor party; on the other hand, the communists pointed out that radicalism lay in union with the Communist party and the Left Wing movement.

The wish of the majority to part company with the radicals was shown in the election programme of the party issued on July 6. This proclaimed the desire to transform "capitalism into socialism" by peaceful methods. The Labor party was opposed to the reduction of wages; favored the repeal of the Trades Union Act; sought the restoration of the rights of the unions; demanded a 48-hour week; sought the extension of the factory code, the minimum wage, etc.; withdrawal of children under 15 from the factories; nationalization of coal, transport, power and life insurance; transference of all lands to public ownership, giving the farmer easy credits and security of tenure; the regulation of the wages and hours of agricultural laborers; the revolution of the educational system to provide public education from nurseries to the universities. Funds for these reforms were to be secured by an increase of the inheritance tax on large estates, by a readjustment of the income tax, by a surtax on all land revenues of more than £500, and by a reduction on the national expenditure for armaments.

GERMANY. In the National elections held on May 20, a total of 152 Socialist deputies and 54 Communists out of 489 members was elected to the Reichstag. Both radical parties gained heavily at the expense of the Nationalists. The Socialist gain was 18 per cent; the Communist, 25 per cent. Out of the 30,592,444 votes cast, the Social Democrats (Socialists) polled the largest number, receiving 9,000,000; while the Communists came in fourth, after the Nationalists and the Centrists, with 3,080,000 votes. The Social Democratic candidates had run on platform which included the following: loyalty

to the Republic; additional administrative and judicial reforms aiming at greater democratization; more protection for the workers; separation of Church and State; and the socialization of industry. The Communists sought the dictatorship of the proletariat. In Berlin they polled 600,000 votes, or one-fourth of all the ballots cast, an increase of more than 60 per cent over their total of four years ago. These gains were at the expense of the Socialists and the Centrists.

See also AUSTRIA, under *History*.

SOCIAL PROGRESS, INTERNATIONAL ASSOCIATION FOR. This international Association, of which the Association for Labor Legislation is the American section, was created in 1925 by amalgamating three former allied organizations, the International Association for Labor Legislation, the International Association on Unemployment, and the International Social Insurance Committee. Two meetings were held in 1928. At the first, in Paris, June 30, representatives from eight countries, including the United States, gave reports on the work of their national sections. At the second meeting, in Geneva, September 23-25, a report on the extension of elementary-school education was made by the special International Technical Committee, and a questionnaire was formulated on labor regulation and unemployment. Another question put on the agenda for international consideration was that of Travelers Migrations. Reports on these subjects from the various sections were to be made in advance of the General Assembly of the Association in the summer of 1929. The Association publishes a periodical, *L'Avenir du Travail*, edited by Dr. Stephane Bauer, at the international headquarters at Basle, Switzerland.

SOCIAL PSYCHOLOGY. See **PSYCHOLOGY**.

SOCIAL SCIENCE AND SOCIAL WORK.

See **CHILD WELFARE**; **WELFARE WORK**.

SOCIETY ISLANDS. See **OCEANIA**, **FRENCH ESTABLISHMENTS IN**.

SOCIETY OF CHEMICAL INDUSTRY. See **CHEMISTRY**, **INDUSTRIAL**.

SOILS. Land reclamation, soil erosion, fertilizing value of minor constituents of the soil, and soil acidity were among the topics which were receiving special consideration by soil investigators.

The trend in the United States toward more discriminating use of soils continued unabated, and the bringing of new land under cultivation was being discouraged. Ray Palmer Teele, in a recent book, *Economics of Land Reclamation*, urged caution in reclaiming new land until fuller and better use was made of the potentially valuable lands already available, which could be more economically used for crop production. There appeared to be a growing opposition to large expenditures of public funds for the purpose of adding to the cultivated areas until the need for more land is clearly shown. Baker states (*Geographical Review*, vol. 18, No. 3, p. 353) that population is not likely to press against the limits of subsistence in the United States for a long time, if ever. Food production, in his opinion, would probably keep pace with the growth of population, at least to the 200,000,000 mark, as a result of constantly improving methods of soil culture. McCall stated (*Journal of the American Society of Agronomy*, vol. xx, No. 12, p. 1241) at a meeting of the American Society of Agronomy that economic conditions called for

a contraction of acreage under cultivation and the elimination of marginal lands from farming for the present. As a matter of fact, since the World War more than 15,000,000 acres of less productive lands had passed out of cultivation in the United States.

The soil survey furnishes a valuable means of selecting the more profitably productive soils. It makes possible the differentiation of agricultural and non-agricultural lands and the selection of those best adapted to special crops and intensive culture. Activity in soil survey and mapping was world-wide. The United States continued to lead in such work, and since 1899 the Department of Agriculture had surveyed and mapped more than 800,000,000 acres, or approximately one-half of the arable land of the country. During 1928 areas aggregating 21,833 square miles were surveyed and mapped in detail and reconnaissance surveys were made of 17,585 square miles. To make these surveys still more valuable from the standpoint of efficient soil culture, it was proposed to supplement them with ecological and plant-adaptation studies.

Widespread interest was aroused in the enormous wastes of soil fertility due to erosion. Losses from this cause were shown to be immensely greater than those resulting from the leaching of the soil and the removal of crops. The United States Department of Agriculture, with the coöperation of the States, was making an active effort to determine the kinds of soils most subject to destructive erosion and the best means of preventing it. Exact measurements of erosion under different conditions had shown the great advantage of terracing or keeping land covered with plant growth, especially sod. The extent of damage already caused by erosion was shown by the fact that 15,000,000 acres of tillable land in the United States had thus been made permanently unproductive and that the damage was steadily increasing. The subject is fully discussed in *Circular 33* of the United States Department of Agriculture, entitled "Soil Erosion—A National Menace," and was also dealt with in a symposium presented at the annual meeting of the American Society of Agronomy.

Evidence continued to accumulate that certain of the less abundant constituents of soils, like manganese, copper, iodine, and others, play a more important part in plant nutrition and in the food and forage value of products of the soil than is generally realized. The addition of small amounts of these substances has been shown to result in marked increases in the productivity of certain soils. The question of the iodine content of soils and of plants grown on them and the possibility of increasing this content was attracting much attention because of the known value of iodine in connection with goitre and similar disorders. Evidence has been obtained that the iodine content of plants varies with that of the soil (and waters) of the region in which they are grown and may probably be increased by iodine fertilizing.

The relation of soil acidity to crop production continued to receive much attention. From a study of the relation of soil acidity to distribution and growth of plants, the North Carolina Experiment Station has worked out the following rough classification of crops with reference to their adaptation to soil reaction: Crops requiring neutral soil, alfalfa, barley, cabbage, red clover, lettuce, mint, spinach, peanuts, and cantaloupes;

crops adapted to slightly acid soil, cowpeas, oats, velvet beans, soy beans, corn, wheat, vetch, and Lespedeza; crops adapted to medium acid soil, sweet potatoes, rye, cotton, tobacco, blue grass, and redtop grass; and crops adapted to strongly acid soil, strawberries, watermelons, and Irish potatoes.

A notable contribution to the literature of soils during the year was the *Proceedings of the First International Congress of Soil Science* (held in Washington in 1927), which presents an epitome of soil investigation throughout the world. Another publication of special interest was a report, *The Soils of Cuba*, by H. H. Bennett and R. V. Allison, issued by the Tropical Plant Research Foundation.

SOLAR PHYSICS. See ASTRONOMY; GEOGRAPHICAL SOCIETY, NATIONAL.

SOMALI COAST. See FRENCH SOMALI COAST.

SOMALILAND, ITALIAN. See ITALIAN SOMALILAND.

SOMALILAND, sō-mă'lē-lānd, PROTECTORATE. A protectorate on the Gulf of Aden belonging to Great Britain bounded by Italian Somaliland, Abyssinia, and the French Somali coast. Area, about 68,000 square miles; population estimated at 344,700, nearly all Mohammedan and entirely nomadic except on the coast where permanent settlements have been made. The chief town is Berbera, with 30,000 inhabitants at the census of 1921. Other towns are Lulhar, with 7300, and Zeyla, with 7000. The main source of wealth in the interior is stock raising. The principal imports are dates, sugar, textiles, rice, and specie, and the principal exports are hides and skins, gums and resins, cattle and sheep, and glue. The only forms of transport are by camel and motor car. In 1926 the imports were £307,423; exports, £205,301; revenue £89,057; expenditure, £167,955. The government is under the British Colonial Office, which is represented by a local governor and commander-in-chief. Governor in 1928, H. B. Kittermaster, appointed Jan. 26, 1926.

SONG RECITALS. See MUSIC.

SONNECK, OSCAR GEORGE THEODORE. An eminent American musicologist, died in New York, October 29. He was born in Jersey City, N. J., Oct. 6, 1873. At the age of ten he was taken to Germany, where he received a thorough academic education at the Gelehrtenschul in Kiel (1883-89) and at the Kaiser Friedrich Gymnasium in Frankfort-on-Main (1889-93). In the latter city he completed his pianistic studies under James Kwast. From 1893-97 he was at the University of Munich, studying musicology under Sandberger and philosophy under Stumpff. He then returned for one year to Frankfort for private study in composition with M. E. Sachs and instrumentation with Ivan Knorr. After spending the greater part of 1899 in Italy in musical research, he returned to the United States, continuing his research work in the libraries of the principal cities. In 1902 he was appointed chief of the music section of the Library of Congress, which position he resigned in 1917 to become director of the publication department of G. Schirmer, Inc., in New York. In 1921 he became its vice president. From 1915 until his death he was editor of *The Musical Quarterly*. Besides, he was secretary of the Beethoven Association, executive member of the Society for the Publication of American

Music and president of the American section of the International Society for Contemporary Music. In 1911 he represented the United States Government at the international congresses of music in London and in Rome, and in 1927 at the Beethoven Centennial in Vienna.

Perhaps Sonneck's most important work was done while at the Library of Congress. When he assumed charge, the music section was little more than an accumulation of copyright material; when he resigned, he had succeeded in making it one of the foremost musical libraries in the world, the printed catalogue of July 1, 1917, listing 797,121 titles. During those years he availed himself to the fullest extent of the unusual opportunities afforded for original research, the results of which he published in a number of books exhibiting profound and accurate scholarship. Thus he laid a real foundation for the scientific study of music in the United States. His elaborate catalogues, issued by the Library of Congress, are among the most valuable contributions to musical bibliography. His principal works are *Francis Hopkinson and James Lyon, Two Studies in Early American Music* (1905); *Early Concert Life in America [1731-1800]* (1907); *Report on the Star-Spangled Banner, Hail Columbia, Yankee Doodle* (1909); *A Survey of Music in America* (1913); *The Star-Spangled Banner* (1914); *Early Opera in America* (1915); *Sum Cuique*, a collection of essays (1916); *Miscellaneous Studies in the History of Music* (1921); *Beethoven: Impressions of Contemporaries* (1927); *Beethoven Letters in America* (1927); *The Riddle of the Immortal Beloved* (1927).

SORGE, sörg, KURT OSCAR. German industrial leader, died at Berlin, September 10. He was born at Zwickau, July 28, 1855, and he studied at the Academy of Mines, Freiberg, 1873-77. After working as a mining engineer in Germany and in the United States for several years, he joined the Krupp works at Essen, in 1893, becoming head director in 1899. During the World War he served as chief technician in the German War Office, from Nov. 16, 1916, until Oct. 1, 1918. After the War, Dr. Sorge was one of President Ebert's principal advisers in industrial matters and as president of the Association of German Industries, 1919-24, he urged upon the Government the necessity of leaving capital free to develop industrial production. He was elected to the Reichstag by the popular party in 1920, and he advocated the acceptance of the Dawes reparation plan in 1926, constantly insisting that business should not be restricted.

SORLIE, sör'lē, ARTHUR GUSTAV. Governor of North Dakota, died at Bismarck, N. D., August 28. He was born of Norwegian parents at Albert Lea, Minn., Apr. 26, 1874, and attended the Albert Lea Lutheran Academy for three years. He moved to North Dakota and worked as a clerk in the Buxton State Bank, and three years later he became manager of a general store. After various commercial positions in St. Paul, Minn., and Grand Forks, N. D., in 1907 he organized and became president of A. G. Sorlie & Co., a grain concern in the latter city. Later he was president of the Sorlie Motor Company, in Larimore, N. D., the Webster-Sorlie Company, in Fisher, Minn., and the Jefferson Motor Company, in Albert Lea, Minn., and vice president of the State Bank of Douglas, N. D. He was elected Governor of North Dakota in 1924 on the Nonpartisan League ticket,

defeating the Republican candidate by a narrow margin. In 1926 he was reelected, but he was not a candidate in 1928, acting, however, in that year as chairman of the North Dakota delegation to the Republican National Convention.

SOUTH, UNIVERSITY OF THE. A Protestant Episcopal institution for the higher education of men at Sewanee, Tenn., founded in 1857. The enrollment for the autumn term of 1928 was 345, of whom 322 were registered in the college and 27 in the theological school, 4 being registered in both departments. There were 40 students in the summer quarter, 28 of whom returned for the autumn session. The faculty had 28 members, exclusive of student assistants. The income from productive funds was \$58,000, while the receipts from all sources totaled \$341,000. The library contained 42,387 volumes. President, Benjamin Ficklin Finney, LL.D.

SOUTH AFRICA, UNION OF. A self-governing dominion of the British Empire, comprising the provinces of the Cape of Good Hope, the Transvaal, Natal, and the Orange Free State; constituted a legislative union by the South African Act of September, 1909.

AREA AND POPULATION. Total area, 472,347 square miles; divided as follows: Cape of Good Hope, 276,966; Natal, 35,284; Transvaal 110,450; Orange Free State, 49,647. Total population, according to the census of 1921, 6,928,580, distributed as follows: Cape of Good Hope, 2,782,719; Natal, 1,429,398; Transvaal, 2,087,636; Orange Free State, 628,827. The total European population of the Union of South Africa, according to the final audit of the 1926 census, is shown in the following table:

CENSUS OF UNION OF SOUTH AFRICA FOR 1926

Province	Males	Females	Total	Per cent increase since 1921
Cape	357,583	348,554	706,137	8.53
Natal	81,170	77,746	158,916	16.13
Transvaal	318,783	294,849	608,622	11.99
Orange Free State	104,992	98,593	202,985	7.65
Total	856,918	819,742	1,676,660	10.34

The principal cities with their populations according to the census of 1921 were: Johannesburg, 288,131; Cape Town, the seat of the legislature, 207,404; Durban, 146,310; Pretoria, 74,052; Port Elizabeth, 46,094; East London, 34,673. The capitals of the respective provinces are Cape of Good Hope, Cape Town; Transvaal, Pretoria; Natal, Pietermaritzburg; Orange Free State, Bloemfontein. The movement of population in 1926 was: Births, 97,224; deaths, 57,793; marriages, 31,998. For a distribution of population by religion according to the census of 1921, see YEAR BOOK for 1924.

EDUCATION. There were in 1926, 4707 State and State-aided schools for European scholars, 330,762 pupils and 3408 schools for non-European scholars with 289,545 pupils, making a total of 8115 schools with 620,307 pupils. The number of teachers in primary, intermediate, and secondary schools numbered 22,274. There were 289 private schools for European scholars and 469 for non-European scholars, with 20,132 white scholars and 20,146 colored, and 1817 teachers. The total number of students enrolled in the universities and colleges at the end of 1926 was 6158. The largest universities in point of number of students, with their average enrollment at the

end of 1926, were, Cape Town, 1663; Witwatersrand, 1347; Stellenbosch, 968; and Transvaal University College, 784.

PRODUCTION. ETC. The production of the principal crops in 1926 was as follows: Wheat, 552,578,000 lbs.; barley, 53,332,000 lbs.; oats, 175,521,000 lbs.; kaffir corn, 150,548,000 lbs.; maize, 2,183,983,000 lbs.; potatoes, 202,890,000 lbs.; cotton (not ginned), 24,936,775 lbs.; tobacco, 16,516,000 lbs.; tea, 4,146,000 lbs.; sugar cane, 2,311,293 tons. The 1926 census of livestock showed 10,337,174 cattle; 856,040 horses; 126,909 mules; 755,280 asses; 908,964 pigs; 35,269,228 woolled sheep; 3,589,549 other sheep; 1,825,189 Angora goats; 6,122,097 other goats; and 103,668 ostriches. The production of wool in 1928 was 285,000,000 pounds and of mohair 8,250,000 pounds.

The value of the mineral production for 1927 in the Union of South Africa was \$297,704,000 to which gold contributed \$209,248,000, diamonds, \$61,540,000, and coal, \$18,665,000. The production of the more important minerals was as follows: Asbestos, 22,043 short tons; coal, 13,306,000 short tons; copper, 10,741 short tons; diamonds, 4,708,000 carats; gold, 10,122,000 fine ounces; silver, 1,012,000 fine ounces; tin concentrates, 1929 short tons. In 1928 the production of coal was 13,388,000 tons. The diamond situation in the Union was so demoralized in 1927 by the alluvial discoveries in the western Transvaal that governmental intervention became necessary. In addition, the diamond syndicate purchased and took off the market \$50,000,000 worth of stones, significant since the annual amount of world consumption is estimated at approximately \$75,000,000. The large production of inferior grades has had an adverse effect on the industry in general, and particularly upon the big companies, reducing both dividends and the scale of operations. To meet the situation, the comprehensive Alluvial Diamond Act was passed in October, 1927, curbing the alluvial production at once and giving the Government broad powers of restriction and regulation of output.

The industrial census of 1925-26 gave the following data: Number of workers, 193,422, of whom, 48,879 were in the metal industry, 34,050 in foodstuffs and drinks, 28,960 in building, 8604 in light, heat, and power, and 14,370 in stone and clay; value of gross output, \$443,909,000, of which metals and machinery contributed \$90,928,000; food and drink, \$141,964,000; chemicals \$31,289,000; heat, light, and power, \$24,063,000; building and contracting, \$42,588,000. The capacity of the prime movers was 937,726 horse power.

COMMERCE. The accompanying table from the *Commerce Year Book* for 1928 give statistics for the trade of the Union of South Africa.

FINANCE. Revenue of £30,073,000 for the fiscal year ended Mar. 31, 1928, and expenditure of £28,478,000 provided the fifth consecutive surplus in the ordinary Union budget. Customs duties were exceptionally heavy, but all classes of revenue were in excess of estimates except taxes on diamond-mining companies. Of the surplus, £500,000 was applied on debt redemption and the remainder to a rebate of 20 per cent in the year's income taxes. The total debt redemption was £1,535,000. The separate railways and harbors budget for the fiscal year 1927-28 showed a net profit of £47,000, with expenditures of £29,364,000. The Union also maintains a separate capital loan account, expenditures from which were £11,000,000, largely for railway and public improve-

ments and covered mainly by an issue of 5 per cent stock to the amount of £5,000,000, maturing in 1945-75 in London, and a local loan for a like amount. The gross public debt on Mar. 31, 1927, was £231,475,948 and the net debt £216,397,410.

GENERAL IMPORTS BY PRINCIPAL COMMODITIES

Commodity	Value (\$1000) 1927
Total imports	359,497
On private account	343,471
From overseas	328,083
Wheat	6,685
Raw coffee	4,451
Tea	4,450
Alcoholic beverages	3,007
Leather footwear	3,989
Cotton piece goods	17,956
Jute bags	4,686
Blankets, rugs, and kafir sheets	6,000
Woolen piece goods	6,407
Silk piece goods	5,338
Apparel (outer)	15,126
Hosiery	3,559
Underclothing	5,606
Wood, wicker, and manufactures	13,797
Mineral oil	11,524
Gasoline, etc.	6,517
Sheet iron, galvanized and corrugated	3,998
Iron and steel pipes and tubes	4,821
Iron and steel wire	4,748
Electrical machinery, etc.	11,809
Agricultural implements and machinery	4,920
Mining machinery	4,999
Passenger motor cars and chassis	16,387
Gold and silver bullion	236
From other States in the South African Customs Union	15,438
For Government use	16,026
Specie *	285

DOMESTIC EXPORTS OF PRINCIPAL COMMODITIES

Commodity	Value (\$1000) 1927
Total domestic exports	361,060
Overseas	350,473
Corn (maize) ..1000 bushels..	8,058
Corn meal	742,885
Sugar	120,304
Hides and skins	13,083
Sheep skins	8,755
Ostrich feathers ..1000 pounds	97
Angora hair	10,681
Sheep's wool	260,334
In the grease	253,866
Wattle bark	210,569
Cargo coal	1,611
Diamonds	4,274
Gold bars ..1000 fine ounces..	6,448
To other States in the South African Customs Union	10,758
Specie *	79,778

* Not included in totals.

COMMUNICATION. In oversea shipping in 1926, 1321 vessels of 4,937,406 tons net entered the ports of the Union of South Africa and 1303 of 4,945,337 tons cleared; in the coastwise trade 3667 vessels of 8,941,822 tons entered and 3684 of 8,982,837 tons cleared. The length of railway line open to traffic in 1927 was 12,624 miles. For operating figures, etc., consult the 1927 YEAR BOOK. The 1927-28 programme of the South African Railway equipment orders for 165 locomotives was completed when the contract for the last 36 locomotives was awarded to the Swiss Locomotive Co., at a price of £200,730. The conditions of the contract provided for delivery in 32 to 48 weeks. This was the first order for the South African Railways that Switzerland has received.

GOVERNMENT. The executive power is vested in the governor-general, appointed by the Crown,

who acts through an executive council of ministers, each in charge of a department; and legislative power in a parliament, consisting of a senate of 40 members, of whom eight are nominated by the governor-general-in-council and 32 by the provinces (eight each); and a house of assembly of 135 members, distributed among the provinces as follows: Cape of Good Hope, 51; Transvaal, 50; Natal, 17; and Orange Free State, 17; the basis of suffrage being the same as that existing in each province at the time of the formation of the Union. The governor-general, commander-in-chief, and high commissioner for the Union in 1928 was the Earl of Athlone and the executive council was composed as follows: Prime Minister and Minister of Native Affairs, General J. B. M. Hertzog; Interior, Health, and Education, Dr. D. F. Malan; Mines and Industries, F. W. Beyers; Railways and Harbors, C. W. Malan; Finance, N. C. Havenga; Justice, T. J. de V. Roos; Defense, Col. F. H. P. Creswell; Labor, T. Boydell; Agriculture, Gen. J. C. G. Kemp; Lands, P. G. W. Grobler; Posts and Telegraphs and Public Works, W. B. Madeley.

HISTORY. As noted in the previous YEAR BOOK, the troublesome question of the South African flag was definitely settled. On the first of June, 1928, the ceremony of hoisting the new flag took place all over the Union. There was considerable rioting in some parts of the country, chiefly among the natives and colored people who were opposed to the new flag, apparently because of the relatively low position granted them in the affairs of the Union.

In November, there was a cabinet crisis brought about over the question of native and white labor unions. The natives in recent years had been organizing on a large scale and their organization, known as the Industrial and Commercial Workers' Union, had a membership of more than 100,000 in 1928. The native union was affiliated with the International Federation of Trade Unions, while the white labor organization, known as the South African Trades Union Congress, was not connected with any international organization. The natives and whites simply do not mix in any way in the Union of South Africa, and when a member of Premier Hertzog's cabinet received a delegation of postal workers representing both branches of labor, the Premier requested the resignation of the cabinet member, W. B. Madeley, Minister of Posts and Telegraphs. When the minister refused to resign, General Hertzog handed in the resignation of the entire cabinet. He was immediately requested to form a new one and did so leaving out the name of Mr. Madeley, who was succeeded by W. H. Sampson, known as a supporter of the white labor element. It was felt in many quarters that this trouble between white and black labor would have a predominant effect on the next election in the Union, the Nationalists championing the cause of "White South Africa" and the Labor party championing the cause of all labor, although few expected the white and black elements of the labor movement to be treated the same if the Labor party were successful.

See also **PHILOLOGY, MODERN.**

SOUTH AMERICA. See under the various South American countries. See also **EXPLORATIONS.**

SOUTH AUSTRALIA. One of the States of the Australian Commonwealth, comprising the central and southern part of the island conti-

nent; bounded by the Northern Territory on the north, by Western Australia on the west, and on the east by Victoria, New South Wales, and Queensland. Area, 380,070 square miles; population, according to the census of 1921, 495,336; estimated on June 30, 1927, 570,900, exclusive of aborigines, of whom the number is unknown. The number of full-blooded natives living in the settled portions has been estimated at only 2531. Capital and largest city, Adelaide, with a population (including suburbs), in 1926, of 316,865. In 1926 the movement of population was: Births, 11,483; deaths, 4877; marriages, 4503.

Education is free, secular, and compulsory. In 1926 there were 1030 schools, primary, secondary, and vocational, with 84,889 pupils under instruction; in the 184 private schools there were 14,990 pupils enrolled. For higher education there is the University of Adelaide, and there are various institutions for the training of teachers and for technical instruction. In 1926-27 the principal crops with their acreage and production were as follows: Wheat, 2,768,403 acres, 35,558,711 bushels; barley, 256,528 acres, 4,470,034 bushels; oats, 152,178 acres, 1,713,377 bushels; hay, 496,105 acres, 598,025 tons; the vineyards produced 16,159,595 gallons of wine. The principal minerals produced are iron, gypsum, salt, phosphate rock, and copper. The value of the minerals produced in 1926 was £1,032,353. The exports in 1926-27 amounted to £17,123,012 and the imports to £15,454,801. The chief exports are wool, wheat, wheat-flour, copper and other minerals, meats, butter, honey, wine, fruits, hides and skins, tallow, leather, and manures. The revenue for 1927 was £10,784,898 and the expenditure £11,834,947. The revenue is largely derived from inland sources—railways and territorial receipts—and the chief items of expenditure are public service, railways, and service on the public debt, which amounted to £82,638,849 on June 30, 1927. In 1925-26, 1296 vessels of 4,525,679 tons entered the ports of South Australia. In 1927 there were 3400 miles of railway in the State.

The administration is under a governor appointed by the Crown, with an executive council; legislative power is vested in a council and an assembly, the latter consisting of 46 members elected for three years. Governor in 1928, Col. Sir Alexander G. A. Hore-Ruthven (appointed in January, 1928); Premier, Treasurer, and Minister of Railways, R. L. Butler.

SOUTH CAROLINA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 1,683,724. The estimated population on July 1, 1928, was 1,864,000. The capital is Columbia.

Crop	Year	Acreage	Prod. bu.	Value
Cotton	1928	2,355,000	725,000 ^a	\$66,700,000
	1927	2,356,000	730,000 ^a	71,540,000
Corn	1928	1,422,000	17,064,000	18,088,000
	1927	1,497,000	25,449,000	22,804,000
Tobacco	1928	148,000	82,288,000 ^b	10,451,000
	1927	104,000	76,648,000 ^b	15,713,000
Oats	1928	337,000	7,751,000	6,821,000
	1927	449,000	10,327,000	7,745,000
Potatoes	1928	36,000	4,068,000	2,644,000
	1927	29,000	3,034,000	5,765,000
Sweet potatoes	1928	49,000	4,214,000	3,582,000
	1927	53,000	5,800,000	4,240,000
Hay	1928	440,000	380,000 ^c	7,016,000
	1927	444,000	355,000 ^c	6,382,000
Wheat	1928	64,000	800,000	1,288,000
	1927	80,000	880,000	1,338,000

^a bales, ^b pounds, ^c tons.

AGRICULTURE. The preceding table gives the acreage, production, and value of the principal crops, in 1927 and 1928.

MINERAL PRODUCTION. The mineral industry of the State consisted, in 1926, almost entirely of the output of clay and its products and that of stone, sand, and gravel. Clay products, the largest single item with regard to value produced, attained \$1,869,420 for 1926, as against \$1,906,241 for 1925. The production of stone was 881,180 short tons in 1926, and in 1925, 833,100; in value, \$1,505,859 for 1926 and \$1,315,613 for 1925. Gold production was trifling—but 15 ounces in 1926; some marl, mica, and barite were obtained; no production of phosphate rock in 1926 was reported. The total value of the State's mineral products for 1926 was \$3,677,209; for 1925, \$3,507,804.

FINANCE. State expenditures in the year ended Dec. 31, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$12,815,410 (of which \$3,737,384 was aid to local education); for interest on debt, \$401,366; for permanent improvements, \$9,819,582; total, \$23,036,358 (of which \$10,564,098 was for highways, \$1,966,769 being for maintenance and \$8,597,329 for construction). Revenues were \$17,464,224. Of this, property and special taxes formed 32.8 per cent; departmental earnings and charges for officials' services, 7.5 per cent; sales of licenses and taxes on tobacco in various forms, soft drinks and gasoline, 48.1 per cent. Property valuation was \$422,169,895; State taxation thereon, \$2,894,979. Net State funded debt on Dec. 31, 1927, was \$29,566,742, chiefly in the form of highway bonds.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 3744.46. There were built in 1928 three miles of additional first track.

EDUCATION. State Superintendent Hope, in the *Journal of the National Education Association*, stated that the yearly average school term for accredited high schools had extended to 172 days. There were in 1926, 296 high schools, which awarded, in that year, 3966 diplomas. It was reported that there were in 1926 nearly 50 per cent more first-grade certified teachers than the number required to fill the 8618 teaching positions in the white schools of the State.

CHARITIES AND CORRECTIONS. The central State authority over the greater part of the State correctional and eleemosynary institutions was exercised in 1928 by the State Board of Public Welfare, created in 1920. This board consisted of the Governor, as ex-officio chairman, and six appointee members. It controlled several State training and reformatory schools, exercising parole power over delinquent inmates; supervised orphanages, county jails, almshouses, and the State Penitentiary and State Hospital; passed upon applications for charitable charter or license; cooperated in parole of adult prisoners; and supervised State work for the blind. A Child Placing Bureau aided needy children in various ways. Under the State Board of Health were two institutions for tuberculosis patients, at State Park: The South Carolina Sanatorium (white), and the Palmetto Sanatorium (colored). Apart from these the chief State institutions were: Industrial School for Boys, Industrial School for Girls, State Reformatory for Negro Boys, State Training School (for the feeble-

minded), State Hospital, Confederate Infirmary, and State Penitentiary. The number of the feeble-minded at the State Training School at the outset of 1928 was 437. The South Carolina penitentiary had a total of 273 prisoners received from the courts in 1928 or 14.8 per 100,000 of general population. There were on Jan. 1, 1928, 447 prisoners.

LEGISLATION. The State Legislature met in regular annual session January 10. It passed an appropriation measure of somewhat over \$10,243,000. Various plans for increasing the State revenue so as to check the State treasury deficit were considered. An act for the regulation of highway traffic was passed, with the requirement that all vehicles coming to those State highways denominated express highways, from transverse roads must make a full stop before entering them. An anti-evolution bill was presented but was killed in committee.

POLITICAL AND OTHER EVENTS. Efforts to enforce the State blue laws, undertaken in the previous year with the support of the Governor, led to the rendering of a State Supreme Court decision on the subject of injunctions that had been granted against State law officials, to restrain them from interfering with the playing of golf and with the sale of gasoline on Sundays. The decision held that the playing of non-commercial golf was not unlawful and that caddies might be used provided that they were not under the age of fifteen years. The Sunday sale of gasoline was pronounced lawful only when it could be proved a work of necessity or of mercy. Serious floods occurred in the Piedmont region early in August.

ELECTION. As in other Southern States, an effort was made in the Presidential campaign to influence the voters to bolt the Democratic Presidential candidate, Alfred E. Smith. In opposition to these efforts was cited Rule 32, a regulation adopted by the Democratic State Convention of 1914, which made it obligatory for members of the party to agree to support its candidates, "State and National" as a condition to their privilege of voting at the State primaries. The rule was construed as a moral obligation, rather than as legally enforceable, but exerted an influence in maintaining party solidarity. The vote of the State was for Smith and Robinson by an overwhelming majority, no considerable Republican vote being cast. The State's delegation of seven United States Representatives, all Democratic, were reelected. Smith (Democrat) for President received 62,700 votes; Hoover (Republican), 3188.

OFFICERS. Governor, John G. Richards; Lieutenant-Governor, Thomas B. Butler; Secretary of State, W. P. Blackwell; Treasurer, J. H. Scarborough, Budget Secretary, Walter E. Duncan; Attorney-General, John M. Daniel; Comptroller-General, A. J. Beattie.

JUDICIARY. Supreme Court: Chief Justice, R. C. Watts; Associate Justices, Thomas P. Cothran, John G. Stabler, Eugene S. Blease, Jesse F. Carter.

SOUTH CAROLINA, UNIVERSITY OF. A non-sectarian State institution of higher education, at Columbia; chartered in 1801 and opened in 1805. The enrollment for the autumn session of 1928 totaled 1475, of whom 947 were men and 528 women. The registration for the summer session was 479. The faculty, including instructors, numbered 82. The appropriation by the General

Assembly of the State of South Carolina was \$426,577 for the fiscal year. There were 82,000 volumes in the library. Additions to the physical plant during the year included: the construction of two commodious wings of the University library; the gift of Melton Observatory from the Hon. Edwin G. Seibels; and the opening of Sloan College, an engineering class-room building. President, Davison McDowell Douglas, A.M., D.D., LL.D.

SOUTH DAKOTA. POPULATION. The fourth State census of South Dakota was taken as of May 1, 1925, and showed a total population of 681,260, of which 20,559 were Indians. Of this total 347,579 were males and 313,122 were females. The Fourteenth Census of the United States, returned for South Dakota 636,547 on Jan. 1, 1920. The estimated population on July 1, 1928, was 704,000. The capital is Pierre.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Corn	1928	4,469,000	93,849,000	\$58,186,000
	1927	4,655,000	134,995,000	76,947,000
Wheat	1928	3,262,000	34,546,000	29,320,000
	1927	3,037,000	45,386,000	47,990,000
Hay	1928	3,193,000	2,919,000 *	21,787,000
	1927	4,115,000	5,532,000 *	35,139,000
Oats	1928	2,193,000	59,211,000	19,540,000
	1927	2,550,000	74,715,000	26,897,000
Barley	1928	1,644,000	35,675,000	17,124,000
	1927	1,200,000	36,000,000	20,880,000
Flaxseed	1928	588,000	3,410,000	6,854,000
	1927	594,000	5,940,000	10,989,000
Potatoes	1928	67,000	6,030,000	2,412,000
	1927	60,000	6,900,000	3,795,000
Rye	1928	162,000	1,458,000	1,152,000
	1927	154,000	2,772,000	2,190,000

* tons.

MINERAL PRODUCTION. The large gold production of the State, principally the output of the Homestake Mine, continued to form the chief part of the mineral output. The quantity of gold mined in the State rose to 322,681 troy ounces for 1927, from 286,861, for 1925. The 1927 production surpassed that of Alaska and was second to that of California alone, in the Union. Its total value for 1927 was \$6,670,400; for 1926, \$5,932,000. Silver production was secondary, being 95,123 troy ounces in 1927 and 82,789 in 1926; in value \$53,935 for 1927 and for 1926, \$51,660. The yearly coal production has run about \$42,000 in value. Of tungsten ore there were mined in 1926, 90 tons, of a total value of \$41,900. Stone was produced to a value of over \$450,000, sand and gravel over \$250,000. The total value of the State's mineral products for 1926 was \$7,595,358; for 1925, \$7,971,650. The 1928 production of the precious metals was reported as: gold, \$6,615,000; silver, 89,000 ounces.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the United States Department of Commerce, were: for maintenance and operation of governmental departments, \$9,110,066 (of which \$1,813,212 was aid to local education); for conducting public-service enterprises, \$543,382; for interest on debt, \$3,104,713; for permanent improvements, \$3,629,526; total, \$16,387,688 (of which \$4,016,341 was for highways, \$1,169,244 being for maintenance and \$2,847,097 for construction). Revenues were \$16,338,291. Of this, property and special taxes formed 30.4 per cent; departmental earnings and charges for officials' services, 7.5 per cent; sales of licenses and taxation of gasoline, 25.5 per cent. Property

valuation was \$1,805,466,033; State taxation thereon, \$4,807,950. Net State funded debt on June 30, 1927, was \$15,014,772.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 4234.79. No building of additional railroad trackage in 1928 was reported.

EDUCATION. It was reported in 1928 that over 50 per cent of the enrollment in the high schools in South Dakota was made up of pupils residing in the rural districts. Enrollment for the State as a whole was stated to be on the increase both in 1927 and in 1928, and in the elementary grades as well as in the secondary; a development to which the somewhat improved economic conditions within the State were favorable. The school population of the State as given for 1928 was 209,101. There were enrolled in the public schools 171,883 pupils, of whom 143,097 were in the elementary schools and 28,786 were in the high schools. Expenditures of the year for education in the public schools amounted to \$18,473,929. The salaries of teachers averaged \$1193.15 per annum.

CHARITIES AND CORRECTIONS. The chief central administrative authority over State institutions for the care or custody of individuals, in 1928, was the State Board of Charities and Corrections, one of the three constitutional boards of the Government. Another of the constitutional boards, the State Pardon Board, consisting of the presiding judge of the State Supreme Court, the Secretary of State and the Attorney-General, exercised powers elsewhere vested in the Executive, with regard to pardons. A statutory Parole Department headed by a State parole officer conducted the parole system. There were at the same time separate commissions for the administration of child-welfare activities and for the control of the feeble-minded. The State beneficent and custodial institutions were: School and Home for the Feeble-Minded, Redfield; School for the Deaf, Sioux Falls; School for the Blind, Gary; State Training School, Plankinton; State Penitentiary, Sioux Falls; Tuberculosis Sanatorium, Custer; Hospital for the Insane, Yankton; Soldiers' Home, Hot Springs. The State Penitentiary received 236 prisoners in 1927 and had in custody 420 persons at the outset of 1928. Their number in proportion to the population of the State was not quite 60 to the 100,000, and was below that for the two years immediately previous, but considerably above that for 1910.

POLITICAL AND OTHER EVENTS. The State Rural Credit Board made public in April a statement of the finances of the State's effort in the course of several years to extend public credit to the farmers. It was reported that the books of the board showed outstanding farm loans to a total of about \$45,000,000. Of this amount \$29,000,000 was rated as having its interest charges met by the debtors; \$16,000,000 was in default or in arrears, of which a considerable part was involved in foreclosure. Counting foreclosed properties at full value, the report indicated a capital deficit of \$5,344,000; and in addition an operating deficit of more than \$700,000 a year. In order to meet this deficit, a special property tax to yield about \$1,000,000 a year was levied by the board. A South Dakota corporation, the Mound City & Eastern Railway Company, gained permission of the Interstate Commerce Commission to build from Mound City to Leola a railroad line 70 miles in length.

ELECTION. In the election of November 6, the popular vote of the State went to Hoover, the Republican presidential candidate, who received 157,603 ballots. Smith (Democrat) received 102,660. Smith apparently received most of the LaFollette vote of 1924. William J. Bulow, Democrat, was reelected governor. The three United States Representatives, all Republican, were reelected.

OFFICERS. Governor, W. J. Bulow; Lieutenant-Governor, H. E. Covey; Secretary of State, Gladys Pyle; Treasurer, A. J. Moodie; Auditor, E. A. Jones; Attorney-General, Buell F. Jones.

JUDICIARY. Supreme Court: Presiding Judge, N. D. Burch; Judges, Dwight Campbell, Samuel C. Pollev, James Brown, Carl G. Sherwood.

SOUTH DAKOTA, UNIVERSITY OF. A State institution of higher education at Vermillion founded in 1882. The enrollment for the autumn term of 1928 was 1227, and for the summer session, 254. The faculty and staff numbered 135. The productive funds amounted to \$495,500, and the income for the year was \$77,419. The library contained 65,000 volumes. President, Robert L. Slagle, Ph.D., LL.D.

SOUTH DAKOTA STATE COLLEGE. A State college of agriculture and mechanic arts, at Brookings, founded in 1882. The enrollment for the summer session and the autumn of 1928 was 1384, distributed as follows: Agriculture, 113; engineering, 188; home economics, 119; pharmacy, 72; commercial science, 143; printing and rural journalism, 25; trades and industries, 5; general science, 218; special students in music, 34; graduate students (included in preceding numbers), 28; secondary school of agriculture, 280; summer school, 170. The faculty, including experiment station and extension staff in agriculture and home economics, numbered 158. The productive funds of the college for the year amounted to \$749,268, with 132,000 acres of land; the income for 1927-28 for college maintenance and extension of physical plant was \$645,556, for agricultural experiment station, \$127,254, and for agricultural and home economics extension service, \$234,226. The library contained 35,000 bound volumes and 12,000 pamphlets. President, Charles W. Pugsley, B.S., D.Agr.

SOUTHERN CALIFORNIA, UNIVERSITY OF. An institution of higher education for men and women at Los Angeles, Calif., founded in 1879. It comprises the following schools and colleges: Liberal arts, music, dentistry, pharmacy, graduate, religion, law, speech, commerce and business administration, education, social welfare, architecture, engineering, medicine, international relations, and university college. The enrollment for 1927-28, including summer session and extension classes, was 15,084. For the summer session of 1928, the enrollment was 4948. In the autumn of 1928, there were 500 members on the faculty. The endowment was \$1,200,000, the income from tuition and fees, \$1,408,777, and other income \$125,637. There were 110,000 volumes in the library. Bridge Hall and a new addition to the Science Building were erected on the campus during 1927-28. President, Rufus R. von Klein-smid, Sc.D., J.D.

SOUTHWEST AFRICA. A former German protectorate, administered since Dec. 17, 1920, by the Union of South Africa under a mandate from the League of Nations; bounded on the north by Portuguese West Africa, on the west by the Atlantic Ocean, and on the south and

southeast by the Cape of Good Hope Province of the Union, and on the remainder of the eastern boundary by the Bechuanaland Protectorate. Capital, Windhoek, with a population of 4196 Europeans and 13,160 natives; area, 311,820 square miles; population, according to the census of 1926, 24,115 Europeans and about 234,790 natives. The non-German element in the European population is almost entirely South African. The chief native tribes are Hottentots, Bushmen, Hereros, Ovambos, and Bergdamarus.

In 1927 there were 50 government schools with 3083 pupils, and 31 registered private schools with 905 pupils, for the education of the white children; for the natives, there were in the same year 48 government-aided mission schools with 3945 pupils, and 12 mission schools not yet aided. Stock raising is the principal pursuit; agriculture has been found impractical on a large scale because of the scarcity of water. The principal mineral product is diamonds; others are copper, vanadium, marble, tin, gold, and silver. Under the influence of expanding mineral and agricultural development, the foreign trade of Southwest Africa has shown a consistently upward tendency. The returns for 1926 disclosed imports valued at £2,507,625 and exports amounting to £3,292,986. The estimates for 1927-28 were: Revenue, £631,500; expenditure, £1,117,002. There are about 1333 miles of government-owned railway and 98 miles of privately owned lines. The head of the government is an administrator representing the Governor-General of the Union of South Africa; he has full power to legislate and is assisted by an advisory council. Administrator in 1928, A. J. Werth, appointed in November, 1925.

SOVIET SOCIALIST REPUBLICS OF RUSSIA. See RUSSIA.

SPAIN. A constitutional monarchy of southwestern Europe, occupying the greater part of the Iberian peninsula and separated from France by the Pyrenees. Capital, Madrid.

AREA AND POPULATION. Continental Spain has an area of 190,050 square miles; including the Balearic and Canary Islands and Spanish possessions on the north and west coasts of Africa, the total area is 194,800 square miles. According to the census of 1920, the population was 21,959,086, as compared with 19,950,817 in 1910. In 1926 it was estimated at 22,290,161. The cities with over 150,000 inhabitants on Dec. 31, 1926, were as follows: Madrid, 799,894; Barcelona, 752,094; Valencia, 264,986; Seville, 213,712; Malaga, 157,990; Zaragoza, 151,855; and Murcia, 151,205. The movement of population in 1926 was: Births, 657,229; deaths, 421,762; marriages, 159,848.

EDUCATION. On Jan. 1, 1926, there were 28,870 public schools and about 5500 private schools, the total number of pupils being about 3,000,000. Secondary education is conducted in "institutions" or middle-class schools, and there must be at least one of them in every province. There were in 1926, 60 institutions with 68,916 pupils. The eleven universities, attended by 29,650 students, are situated at Barcelona, Madrid, Granada, Murcia, Oviedo, San Diego, Salamanca, Seville, Valencia, Valladolid, and Zaragoza. At Cadiz there is a medical faculty affiliated with the University of Seville, which also maintains an educational institution in the Canary Islands.

PRODUCTION. Agriculture is the principal source of national income in Spain. There were 47,

823,000 acres of arable land in 1925, equal to 38.3 per cent of the total area and 62,471,000 acres of forests and pastures. In 1927 the crops harvested were approximately equal in size to those of 1925, when their value was placed at 10,115,400,000 pesetas. More than half of Spain's exports consist of agricultural products. In 1925 there were 3,794,000 cattle, 5,267,000 swine, 20,067,000 sheep, 4,749,000 goats, and 3,061,000 horses, mules, and asses. The acreage and production of the principal crops in 1927 were as follows: Wheat, 10,826,000 acres, 144,824,000 bushels; rye, 1,818,000 acres, 26,515,000 bushels; barley, 4,452,000 acres, 92,223,000 bushels; oats, 1,909,000 acres, 39,217,000 bushels; corn, 1,143,000 acres, 20,105,000 bushels; rice, 102,000 acres, 15,161,000 bushels; potatoes, 762,000 acres, 134,692,000 bushels; sugar beets, 153,000 acres, 1,520,000 metric tons; olive orchards, 4,166,000 acres, 158,177,000 gallons of oil; grapevines, 3,417,000 acres, 585,210,000 gallons of wine.

Mineral production, though less important than agricultural, reaches large figures. In 1926 the value of crude mineral products was 475,598,000 pesetas (\$70,864,000). In 1927 there were produced 6,460,000 metric tons of coal and lignite, 646,000 tons of coke, 612,000 tons of pig iron, 122,000 tons of lead, and 17,000 tons of zinc.

The principal manufactures of Spain are cotton goods, paper, glass, sugar, cork products, silk, and metallurgical products. The number of industrial employees was as follows: 1926—minerals, 109,705; metals, 55,692; 1924—cotton textiles, 115,000, wool textiles, 26,850, silk textiles, 3110.

COMMERCE. The last year for which full trade returns were available was 1926, when the imports were valued at \$415,630,000 and the exports at \$309,879,000. The trend of foreign trade in 1927 was exceptionally strong. In that year exports to the United States were valued at 211,958,000 pesetas and imports from the United States at 512,540,000 pesetas.

FINANCE. The budget for 1928 provided for revenues of 3,258,518,604 pesetas and expenditures of 3,257,590,079. At the close of the year the receipts were stated to amount to 3,520,000,000 pesetas and the expenditures to 3,340,000,000. The ordinary budget for 1929 provided for revenues of 3,399,800,000 pesetas and expenditures of 3,370,100,000 pesetas. The total funded public debt on Dec. 31, 1927, was 17,804,000,000 pesetas. During the year the Spanish Government took action to defend the peseta from wide fluctuations caused by speculation. By royal decree dated June 25, the Government was authorized to intervene in the international exchange market for the exclusive purpose of regulating the quotation of the peseta. This decree provided also for the appointment of a committee of which the Minister of Finance acts as chairman. This committee had at its disposal a fund of 500,000,000 pesetas, half of which was provided by the Treasury and half by the Bank of Spain. It had power to open credits; to acquire or pay out foreign moneys at exchange rates which it may fix; to make contracts with companies and individuals for effecting payments abroad; to buy and sell gold in bars, coins, and notes; and in general to carry on every type of banking and mercantile operation.

COMMUNICATIONS. On June 30, 1927, the merchant marine consisted of 885 vessels of 1,161,369 gross tons. The total length of railways in

Spain was approximately 10,000 miles, of which 7256 miles were of standard gauge. The railroads belong to private companies, most of which have obtained guarantees or subventions from the Government.

On July 2, *Commerce Reports* gave the following account of the completion of the Franco-Spanish Trans-Pyrenean Railway:

With the opening of the so-called Pau-Laruns-Bedous-Canfranc-Jaca trans-Pyrenean Railway in July, 1928, by the Midi Railway, the first of three proposed trans-Pyrenean routes will have been completed. It is expected that this line, affording a new trade route between France and Spain, will result in the greatest commercial advantage to both countries. . . .

The Toulouse-Barcelona Railway, which on the French side is under construction by the Midi Railway, is expected to be completed next year. The signing of this agreement and its ratification by the two governments was affected after negotiations lasting nearly half a century, during which many factors, broadly grouped as technical, financial, and political, intervened to prevent an earlier understanding.

The first of the trans-Pyrenean railways to be completed from Bedous, France, to Jaca, Spain, will open direct communications between the Aspé Valley in France and the Aragon Valley in Spain. It is better known as the Pau-Saragossa line because its main terminals are at these points, but as express trains will come through Pau from Paris en route to Saragossa it is also referred to as the future Paris-Saragossa line. The trans-Pyrenean part of this line prolongs the existing line from Pau to Bedous, of which the section Pau-Oloron was opened in 1882 and the section Oloron-Bedous in 1914. The final section—from Bedous to the frontier—will be opened in July, 1928.

To pierce the mountains, the railway company had to build 14 tunnels on this line. The longest and most difficult is the Somport international tunnel, extending for nearly 5 miles, of which approximately 1 1/4 miles are on French and the remainder on Spanish soil. At the mouth of this tunnel on the French side the railroad tracks by gradual elevation from the valley attain a height of 3,510 feet above sea level. In its passage through the tunnel, the track rises another 460 feet and then descends somewhat until at the international station of Canfranc, the height is 3,900 feet.

The Toulouse-Barcelona trans-Pyrenean Railway, via Axles-Thermes and Ripoll, work on which is almost completed and which is expected to be opened next year, cuts through the Pyrenees at a point considerably east of the Bedous-Canfranc line and is consequently nearer to the Mediterranean coast than to the Atlantic seaboard. This railway prolongs the existing line from Toulouse to Axles-Thermes, whose section Toulouse-Foix was opened in 1862, the Foix-Tarazon section in 1877, and the section Tarazon-Axles in 1898. The final section from Axles to the frontier, work on which is proceeding in France, will be finished in time to open for exploitation in 1929. On the Spanish side a reduced service is already in operation, the delay on the French side being due to interruption of the work during the War. . . .

GOVERNMENT. According to the constitution, executive power is vested in the King, who acts through a responsible ministry, and legislative power in the Cortes, or Parliament, consisting of the Senate and Chamber of Deputies. Parliament was dissolved by royal decree, Sept. 16, 1923, and the control of the Government has been in the hands of the dictator, Primo de Rivera. He established a National Assembly with very shadowy powers late in 1927. King in 1928, Alfonso XIII, who succeeded on his birth, which occurred after the death of his father, on May 17, 1886. The civil government in 1928 was constituted as follows: President of the Council and Minister of Foreign Affairs, Primo de Rivera; Justice and Worship, Galo Ponte; War, General Duke of Tetuan; Marine, Vice Admiral Cornejo; Finance, Calvo Sotelo; Interior, Gen. M. Anido; Public Instruction, M. Callejo; Public Works, M. Benjumea; Labor, M. Aunos.

HISTORY. Spain passed through a normal year, considering the dictator form of government. General Rivera was as firmly entrenched in power at the close of the year as he was at the be-



ginning, despite a revolt or two which were easily suppressed. One bitter opponent of the Rivera régime passed from the scene with the death of Blasco Ibañez, who died, a virtual exile, in France late in January. (Consult his biography.) Early in the year, Spain also gave notice to the effect that she would remain in the League of Nations. (See LEAGUE OF NATIONS.) In July, 1928, there was published a draft of the new constitution for Spain, which had been prepared by a commission appointed some time ago for the purpose. It was stated that the actual draft was drawn up by the dictator himself.

On September 13, the fifth anniversary of the accession of Primo de Rivera to power was celebrated throughout Spain. One of the concomitant movements of all such celebrations was the suppression of a revolt which was declared to be widespread in the south of Spain. Some press articles stated that 2000 arrests followed the abortive attempt to overthrow Rivera. The Spanish Government established a stricter censorship than usual and issued statements to the effect that the movement, while it involved all shades of political opinion, was easily suppressed and did not interfere in any way whatsoever with the celebration. For Spanish international expositions, see EXPOSITIONS.

SPAIN-PORTUGAL TREATY. See ARBITRATION INTERNATIONAL.

SPANISH-AMERICAN LITERATURES.

The remarks opening this article in last year's YEAR BOOK still hold good concerning the difficulty of receiving promptly literary works from Spanish-American authors. The general movement, north and south, had not yet gotten under way as it must eventually, and hence, the chronicler's task is complicated. Again our readers must be reminded that the facts here printed must not be considered as exhaustive nor must the omission of some of the countries be taken as evidence that they produced nothing in the year 1928. It means simply that, despite all efforts, the chronicler received nothing from those countries.

ARGENTINA. Owing to a series of untoward accidents, the Argentine Academy had been seriously disrupted. By negotiations with the Royal Academy of Spain, of which it is a Correspondent, a thorough reorganization was authorized, the newly elected members being such distinguished persons as Ricardo Rojas (poet, essayist, literary historian), Arturo Capdevila (poet and magistrate), Leopoldo Lugones (poet), Manuel Gálvez (novelist, journalist, and versifier), Leopoldo Díaz (poet and politician), Manuel Ugarte (publicist), Gustavo Martínez Zubiría (novelist, Hugo West), and Enrique R. Larreta (novelist). These men are authorized to complete the number of members up to the standard 18 which applies to all the American academies which are Correspondents of the Spanish Academy.

The following items are not without interest in connection with Argentina's activity for the past year: Julio Álvarez del Vayo (publicist and journalist), *La senda roja* (very well received); Carlos Vega López, *La muerte vencida*; C. M. Ocantos (retired diplomat living at Madrid), *Novelas Argentinas: XIX—El emboscado*; and *El Locutor: Biblioteca Hernando*, tomo ii; J. Millé i Giménez, *Estudios de literatura española (Biblioteca Humanidades, editada por la Facultad de Humanidades, etc., de la Universi-*

dad de La Plata); Bartolomé Mitre, *Soledad (Facultad de Filosofía y Letras de la Universidad de Buenos Aires, Instituto de Literatura Argentina, Sección de documentos, Serie 4a. Novelas. tomo i, Núm. 4)*; Gabriel Paláu, *¿Incrédulo tú?*; Leopoldo Lugones, *Poemas solariegos* (an unusually fine piece of work and destined to last); Mario César Gras, *Los Gauchos colonos* (continues the series begun by Hernández and Güiraldes concerning Literatura Gauchesca); Arturo Capdevila, *Babel y el castellano* (it is to be noticed that the poetic jurist has a nice taste in matters of language and does not feel that in order to be patriotic he has to talk a harsh form of his ancestral tongue); Rafael Calzada, *Cincuenta años de América*. The poet, dramaturge, short-story writer, and historian, Guillermo Stock, published two works that were enthusiastically received: *El Paraíso Futuro* (a dramatic religious poem), and *Kurkara (Viajes y reflexiones de Kurkara)*. This author has done other striking things, beginning as far back as 1892 when he translated Poe (from English, not from Baudelaire's French version, as has been the case with several Spanish translations), but we can mention only the most recent: *Y soplaron otros vientos* . . . (dramatic novel, 1927); *Un ponderado Jefe de la Armada y su doble Personalidad* (1924); and *La senda pensativa* (1923).

BOLIVIA. Until 1928 Bolivia had no Academy that was recognized as a Correspondent of the Spanish Academy. During the year, however, the necessary arrangements were made and the following scholars were elected as the nucleus which should proceed to the election of the remaining members: Rosendo Villalobos (Director), one of Bolivia's most eminent poets, author of *Aves de paso*, *Memorias del corazón*, and *Ocios crueles*; Francisco Iraizóz (Censor); Victor Muñoz Reyes (Secretary); Hernando Siles (one of the most eminent of South American lawyers and author of several important treatises, such as *Código Civil*, *Código Penal*, and *Procedimiento Civil*); Félix A. del Granado (poet and prose writer); Ricardo Mújica (poet and dramatist, author of *Himno a Chuquisaca*, which won a prize in 1909, and *Ensayos Literarios*); and Florián Zambrana. The following items have come to our attention: Félix A. del Granado, *Ensayos Literarios (Biblioteca Boliviana, vol. i)*; Franz Tamayo, *Nuevos Rubáyit* (262 quatrains à la Omar Khayyám); Saturnino Rodrigo, *En la Pendiente* (comedy of Sucre customs, awarded a prize by the Círculo de Bellas Artes); Casto Rojas, *La reintegración marítima de Bolivia—Realidades* (a dignified presentation of Bolivia's case in the Tacna-Arica question); José Salmón Ballivián, *Ideario Aimará* (2d ed.; a careful study of Bolivian-Indian problems); José Aguirre Achá, *De los Andes al Amazonas—Recuerdos de la Campaña del Acre* (2d annotated and enlarged edition); G. Ríos Bridoux, *Por amor a Bolivia—Gobierno, Política, Educación* (a careful study of Bolivian problems).

CHILE. Agustín Edwards has written a book entitled *Mi tierra nativa*, which describes Chile historically, geographically, and economically with regard to each one of its districts. Of particular interest is the chapter on Araucanía, setting forth all the intimate details of the life, customs, superstitions, and legends of the Araucanians as well as the wealth of the natural

resources of the district. Of another nature is *El Chileno en Madrid*, by Edwards Bello, since, in this case, the author gives the reactions of a Chilean to what he sees about him in Madrid. Another interesting book is *El barco inmóvil*, by Edgardo Garrido Merino, the celebrated short-story writer of Chile. Among his other works may be mentioned *El poeta negro*, *La voz de la incógnita*, and *El Cristo que fué árbol*.

Scholarship was not neglected since the veteran scholar J. T. Medina gave us *Chilenismos: Apuntes lexicográficos*. During the year, Chile lost one of its great sons in the person of Francisco A. Concha Castillo, member of the Chilean Academy since 1915, poet, literary critic, philologist, and dramatist. Among other things he was the author of *Al vivir* (poems), *Escenas líricas* (dramas) and *Caracteres de la poesía Chilena y sus vinculaciones con la escuela castellana o salmantina* (his entrance discourse for the Chilean Academy). Captain Francisco A. Machuca produced *Las Cuatro Campañas de la Guerra del Pacífico*, tomo ii.

COLOMBIA. The learned secretary of the Colombian Academy, A. Gómez Restrepo, published a volume entitled *Relicario*. He was also associated with V. E. Caro in publishing vol. v of the *Obras Completas* of that great Colombian humanist, M. A. Caro. This particular volume contains *Estudios filológicos y gramaticales, Segunda Serie*.—Alfredo Gómez Jaime wrote an attractive volume of verse entitled *Armonía y emoción*.—The most astounding performance of the year was that of José Eustasio Rivera in the production of *La Vorágine*. Few works in any land have won such general approval from the critics of so many countries and in terms so cordial. It is a rare example of the power to reproduce the milieu and associate it so intimately with the characters of the book. It is a marvelous picture of the forests of the Amazon. It had been translated into several languages and at the end of the year was about to appear in English.

One of the most interesting literary events of the year was connected with the person of Daniel Samper Ortega, the dramatist, novelist, and journalist, who lectured on Colombia and its literature from the very chair of Fray Luis de León when the University of Salamanca celebrated the four hundredth anniversary of the great Augustinian (Dec. 6, 1927); and later, in Bogotá (on the King's birthday, May 17, 1928) in the Gimnasio Moderno, he gave a lecture on the greatest of all the Spanish mystics. The date for this second lecture was chosen at the request of the Rector of the University of Salamanca, who gave the visiting lecturer a special commission back to his own institution. Both occasions are included in his book, *Conferencia sobre Fray Luis de León*. It is interesting to note that the chair of Fray Luis had been kept closed until this centenary year and that it was opened for an American, Dr. James Brown Scott, Nov. 11, 1927; Samper Ortega being the first Hispano-American to occupy it.

COSTA RICA. Ricardo Fernández Guardia gave us a volume entitled *La independencia y otros episodios*. A former minister of public instruction in 1928 teaching at Northwestern University, Roberto Brenes-Mesén, published a handsome new volume of verse entitled *Los dioses vuelven*. Other poetic works of his are: *En el Silencio*, *Hacia Nuevos Umbrales*, *Voces del Angelus*, and

Pastorales y Jacintos. He is also the author of the very scholarly work, *Gramática, Histórica, y lógica de la lengua castellana: Parte I: Fonología y morfología*.

CUBA. The learned jurisconsult, D. V. Tejera (Hijo), had again been studying important social problems and within the year published the following titles: *Soberanía de las Convenciones*, *Responsabilidad Penal en que incurren Los Imponedores de Modas*, *La Denuncia y las Ideas Modernas*, *Protecciones Generales para los niños que deben figurar en el código penal*, *El Juego en el derecho penal del Manava-Dharma-Sastra*, and especially his study entitled *El Adulterio*. We have also *Cuestiones Cubanas*, by Emilia Bernal, and Ramón de Palma gave us *Cuentos Cubanos* with an introduction by A. M. Eligio de la Puente. The recently established Academia Cubana (related duly to the Real Academia Española) lost one of its most distinguished members through the death of Carlos Loveira, a renowned jurisconsult and Cuba's representative in the League of Nations. Cuba lost also the poet, Vicente Silveira Arjona, a simple mulatto workman (born in Guanajay, 1841) who by dint of great efforts obtained an education above the average and published, among other things, *Flores y espinas* (1873) and *Florescencias de invierno* (1910).

ECUADOR. L. Pallares Arteta wrote *La Danza de los Colores*; and Benjamín Carrión, *Los Creadores de la Nueva América*, with prologue by Gabriela Mistral, the Chilean poetess. This volume deals with the Mexican, José Vasconcelos, the Argentine, Manuel Ugarte, the Peruvian, F. García Calderón, and the Bolivian, Alcides Arguedas.

GUATEMALA. The Guatemalan poet, Rafael Arévalo Martínez, published recently two volumes, one containing the novel, *El hombre que parecía un caballo*, and some verse under the title, *Las rosas de Engaddi*. The other volume contains a new novel, *Las noches en el palacio de la Nunciatura*, and a short novel entitled *Sentas* but written as far back as 1910.

HONDURAS. From Honduras may be noted a very important little work entitled *Bosquejo Histórico de Honduras: 1502-1921*, by Rómulo E. Durón.

MEXICO. The Mexican Academy lost early in the year its distinguished Catholic journalist the author of various philosophical studies, e.g. *Lo escencial en el positivismo*, and political questions, e.g., *Código de la reforma*, i.e., Francisco Pascual García. To succeed to the vacancy thus created, the historian, Antonio de la Peña y Reyes, was elected but died in October before he could take possession of his chair. The greatest loss, however, was that of the beloved national bard, Salvador Díaz Mirón, whose funeral was a veritable national tribute from all classes of society. See MIRÓN. Various works of importance appeared, of which the following are some of the most important: Genaro Estrada, *Crucero* (Poésías); M. Gómez Morín, *El Crédito Agrícola en México*, and *España Fiel*; M. Gómez Palacios (novelist and poet), *El Mejor de los Mundos Posibles* (*Romance de Episodios Nacionales*); M. L. Guzmán, *El Águila y la Serpiente*; M. Horta Vide Ejemplar de D. José de la Borda; J. Jiménez Rueda, *La Silueta de Humo* and *Historia de la Literatura Mexicana*; E. Luquín, *Telones de Fondo*; F. Monterde (critic), *Perfiles de Taxco*; G. Owen, *Novela como Nube*; J. J. Tablada, L.

Feria; E. Villaseñor, *Éxtasis* (Novela de Aventuras); X. Villaurrutia, *Dama de Corazones*; Rosenberg and Templin, *Anthology of Mexican Verse*; B. J. Gastelum (the psychologist), *Inteligencia y Símbolo* (1927) and *La Clase: Arquitectura de la Comunidad* (La Clase forms part of a larger work to be entitled *Física de la Actitud*); J. Torres Bodet, author of a highly praised volume, *Poesías* (1923), and *Margarita de Niebla* (1927), has just published *Perspectiva de la Literatura Mexicana actual* (1915-1928), containing a useful bibliography of the period concerned, and *Contemporáneos* (*Notas de Crítica*); Esperanza Velázquez Bringas and Rafael Heliodoro Valle, *Índice de Escritores*, a very useful book of data concerning 252 writers, 22 of whom are Spanish, the remainder Spanish-American. The second of these two writers, Rafael Heliodoro Valle, has written some serious studies in the history of diplomacy and the history of the Church, as will be seen from the titles, *La Aneación de Centro América a México* and *El Convento de Tepotzotlan*.

NICARAGUA. For many years Nicaragua was like some other countries in Spanish-America, without an Academy that was a Correspondent of the Spanish Royal Academy. Under negotiations carried out during 1928, Nicaragua was authorized to have such an Academy and the following seven persons were elected and empowered to fill the remaining vacancies: Carlos Cuadra Pasos (Minister of Foreign Affairs), Director; Francisco Paniagua Prado (jurisconsult, publicist, and writer), Perpetual Secretary; Manuel Maldonado, Censor; José Antonio Lazcano (Archbishop and Metropolitan of Managua), Treasurer; Pedro Joaquín Chamorro (politician), Librarian. On the day of inauguration (August 8), a government decree gave the Academy juridical status, established biennial prizes, commissioned it to make a dictionary of provincialisms, and housed it officially in the National Library which it placed under its direction. Nicaragua lost the poet Ramón Sáenz Morales.

PERU. A book of the year was *Lima y Ricardo Palma*, by Luis Alberto Sánchez.

REPUBLICA DOMINICANA. Federico Enríquez Carvajal, *Mi album de sonetos*; and José Joaquín Pérez, *La Lira*, are notable works.

SAN SALVADOR. Arturo H. Lara wrote *Monañas de Cristal*.

VENEZUELA. The polygraph, Rufino Blanco Fombona, wrote *Tragedias grotescas* which was highly praised, even to the point of being mentioned for the Nobel Prize; the poet, Udón Pérez, wrote *Láurea*; and L. E. Mármol, *La locura del otro*. R. Silva Uzcátegui won the Royal Spanish Academy's Hispano-American Prize for 1927-28 with his *Historia crítica del Modernismo en la literatura castellana*, a book which appeared in 1925.

SPANISH LITERATURE. For the third year in succession, the dramatic output in 1928 seemed to have run ahead of those of the other branches and this time erudition seemed to have outstripped fiction. The transition movement mentioned in the 1927 YEAR BOOK's account still remained with its outlines somewhat blurred and disconcerting.

DRAMA. Some of the older generation gave evidence of continued fecundity: J. Benavente, *Pepa doncel*, and *El Demonio fué antes ángel*; the Alvarez Quintero brothers, *Los mosquitos*, *Novelera*, and *Rondalla*; E. Marquina, *La vida*

es más, *La dueña del mundo*, and *Pasión y muerte*; Luis Fernández de Ardevín, *La Maja* and *Via Crucis*; Carlos Arniches, *El señor Adrián*, o ¿Qué malo es ser bueno!; P. Muñoz Seca and Pérez Fernández, *La Lola*; M. Linares Rivas, *El rosa de las tres rosas* and *La última novela*; the poetio Machado brothers, Manuel and Antonio, gave a great comedy in verse, *Las adelfas*; M. Fontdevila, *El caballero inmoral* and *La dona verge*, translated by L. Bejarno as *La protegida* (melodrama, wildly received in both versions); J. Grau, *El caballero Varona*, and *El señor de Pigmalión*; Julio de Hoyos, *Tigre Juan* (adapted from Pérez de Ayala's novel, *Tigre Juan*, el curandero de su honra); Pilar Millán Astray (sainetista), *Mademoiselle Naná*; and Felipe Sassone, *Sí, señor; se casa la niña*, *Paloma*, and *No tengo nada que hacer*.

The following may also be noted: Alejandro Mac-Kinlay, *El que no puede amar* (original note on an old theme: the Devil incarnates in the person of a man seeking true love on earth, but, under curse, fails on every occasion, since, every time he approaches the object of his affections, he feels an aversion that is the reverse of the primitive love-longing that had led him to her); González Parra (a blind author), *Más que la honra*; Luis de Vargas, *Don Floripondio* (tragi-comedy of a man so grotesque as to be denied the paradise of love); and a few new dramatists: Honorio Maura (one of the best of the younger group), *Cuento de Hadassas, Raquel* (great success), *La Muralla de oro*, and *Su mano derecha* (his best so far, in sparkling dialogue); Ignacio Sánchez Mejías (a beginner of much promise), *Sinrazón* (the clearest note of originality of the season: a play among idiots; where everything happens naturally); E. Suárez de Deza, *Te quiero, te adoro!*, *Los marineros*, and *La chica del Citroën*; Leandro Navarro and Pérez Moris (the latter new), *¿Mi mujer no es mi mujer?*; Antonio de Guzmán, *Los Gonzalones* (which won the competition for new authors conducted by "A B C"); and Eusebio de Gorbea (a new dramatist of extraordinary power) published his notable play, *Los que no perdonan*.

FICTION. The following well-known men have lived up to their reputations: A. Palacio Valdés, *Cármenes de Granada*; Eduardo Zamacois, *Las raíces* (hailed as magnificent); W. Fernández Flórez, *Relato inmoral* (masterly exhibition of his gifts as a satirist); José Más, *La huida*; J. M. Salaverría, *El muñeco de trapo*; A. Insúa, *Humo, dolor, placer* (equals anything he has yet done); A. Cotarelo Valledor, *Lar: Contos de Nadal*. Less well-known writers who attracted favorable attention are Dr. César Juarros, *El niño que no tuvo infancia*; Carmen Díaz (14 years old), *Mis muñecas* (interesting, with prologue by Santiago Camarasa); Emiliano Ramírez Ángel, *Uno de los dos*; Ceferino R. Avecilla, *La sombra enmascarada* (beautiful); Diego San José, *El humo de la gloria* and *El abogado del diablo*; Adolfo de Sandoval, *Fuencisla Moyano*; and Ricardo León, *Jauja*.

POETRY. The following items, while not very numerous, are really quite worth while: Concha Méndez Cuesta, *Surtidor*; A. Quijano y Quijano, *Visión lejana y otros poemas*; Luis Ardila, *Alma desnuda* (beautiful); Luis Amado Blanco, *Norte* (exquisite); J. M. Monfort, *Por la senda solitaria* (fine); Ricardo Sánchez Madrigal, *Flores de Murcia*; Marqués de Figueroa, *Libro de can-*

tigas, en tierras galaico-lusitanas; and A. Bórquez Solar, *El Paladín trovador*—Poema dramático.

ERUDITION. Among the most interesting things in the scholarly output of Spain are the following: Andrés Torre Ruiz, *Dos ensayos* (keen æsthetic studies); Aurelio Báig Baños, *Historiografía de España y América*; V. García Rey, *El deán don Diego de Castilla*; F. Carmona Nenciales, *El amor y la muerte en las novelas de Insúa and Vida y literatura de Blanco Fombona*; José Díaz Fernández, *El bloca*; Marqués de Villaurrutia, *España en el Congreso de Viena, según la correspondencia oficial de don Pedro Gómez Labrador, Marqués de Labrador* (2d ed. revised and enlarged) and *Palique Diplomático: Recuerdos de un Embajador*: Prólogo de . . . M. González Hontoria, Segunda Serie; Miguel Artigas, *Góngora y el gongorismo*; A. Castro, A. Millares Carlo, and A. J. Battistessa, *Biblia medieval romanceada, según los manuscritos escurialenses*; A. Malaret, *Fe de erratas de mi Diccionario de Americanismos*; R. Menéndez Pidal, *El Idioma Español en sus primeros tiempos*, vol. ii; J. Ribera y Tarragó, *Disertaciones y opúsculos (edición colectiva que en su Jubilación del Profesorado le ofrecen sus discípulos y amigos: 1887-1927), con introducción de M. Asín Palacios*; M. de Saralegui y Medina, *Escarceos filológicos; El Testamento de Colón*; Juan Verdades; L. Carré Alvarellos, *Diccionario Galego-Castelán, Tomo I; Diccionario Catalá-Valenciá-Baleár* (through vol. i, fasc. 6); F. Navas, *Las esfinges de Talía*; M. Mozas Mesa, *Mi libro: variedades literarias*; J. Camba, *Sobre casi todo*; Beatriz Díaz de Rabaneda, *Alma inquieta* (proves herself to be a profound thinker); T. Ortega, *La voz del paisaje*; Lope de Vega, *El castigo sin venganza* (ed. conforme al MS autógrafo de la Ticknor Library de Boston por Adolfo Van Dam); J. A. Balseiro, *El Vigía, Ensayos, II*; A. Hamel, *Lesebuch der Spanischen Literatur des XIX und XX Jahrhunderts*; Barbara Matulka, *The Cid as a Courty Hero from the Amadis to Corneille*; N. Alonso Cortés, *La muerte del Conde de Villamediana; Clásicos Castellanos*, vols. 81-90; G. L. Doty, *Juan de Zabaleta, El Día de Fiesta por la Mañana*; and E. Cotarelo y Mori, *Discurso acerca de las obras publicadas por la Real Academia Española*. The volume *Miguel de Unamuno, novelista-poeta-ensayista*, by M. Romero-Navarro, is a very important study of that noted character, quondam Rector of the venerable University of Salamanca.

ROYAL ACADEMY. The Academy was unusually active in the year 1928. In addition to making for the *Fiesta del Libro* an exhibition of all the books that it has published in its two centuries of existence, it fomented the establishment of several Academies in the Americas: the Nicaraguan Academy and Bolivian National Academy were established, and the Argentine Academy was reorganized; and it awarded several prizes. The Fastenrath Prize for History, in 1927, went to Félix Llanos y Torriglia for his *Así llegó a reinar Doña Isabel la Católica*.—The Piquer Prize for Drama, in 1927, was won by E. Marquina, with *La ermita, la fuente y el río*.—The Hispano-American Prize for 1928 was awarded to R. Silva Uzcátegui of Venezuela for *Historia crítica del Modernismo en la literatura castellana*.—The Asociación de la Prensa de Santander organized a 1928 poetic contest, on the theme: *Canto a la mujer*. The prize of 5000 pesetas was won by

Manuel de Góngora, with *Española fué mi madre, y la madre de mis hijos*.—The Academy had established in 1924 the Camoens Prize to be awarded in 1928 at the centenary of the Portuguese poet, and the prize was awarded to M. Marques F. Braga for his essay on how to edit the Spanish works of Camoens. It has announced also a Centenary Prize in honor of Leandro Fernández de Moratín, the subject being the best vocabulary of the author's works, as compared with that of his contemporaries.—The Academy made a facsimile reprint of the first edition (Salamanca, 1496) of the *Cancionero de Juan del Encina*, from the only two known copies (each incomplete, but mutually completing each other).—To replace J. Rodríguez Carracido, choice was made of Augustín González de Amezúa, lawyer, man of letters, crowned by the Academy in 1912 in a public contest, for his critical edition of two of Cervantes' *Novelas ejemplares*; and to replace the member-elect (the renowned philosopher and orator, Juan Vázquez Mella), the famous young novelist, Ramón Pérez de Ayala.

NECROLOGY. Spanish letters again suffered heavily both at home and abroad. In addition to the two deaths just mentioned, we must chronicle the following: the novelist, Vicente Blasco Ibañez; the Marqués de Laurencín (historian and director of the Royal Academy of History); H. A. Rennert (the authority on Lope de Vega); Charles Fletcher Lummis (authority on the Southwest); Antonio de la Peña y Reyes (historian and member-elect of the Mexican Academy); Ricardo de la Vega (celebrated actor); Ceferino Palencia y Alvarez (equally celebrated as actor); and María Guerrero (for fifty years the queen of the Spanish stage).

SPECTROSCOPY. See ASTRONOMY; PHYSICS.

SPECULATION. See FINANCIAL REVIEW.

SPEED REGULATION. See AUTOMOBILES.

SPIRIDAN COLLECTION. See ART SALES.

SPIRITUALISM. See PSYCHICAL RESEARCH.

SPIRITUALIST ASSOCIATION, NATIONAL. An organization maintaining the religious belief that the spirit world forms a counterpart of the world of common experience. Spiritualism originated as a doctrine in the writings of Andrew Jackson Davis, in 1845, and local groups came into existence in considerable numbers in many parts of the United States between 1850 and 1872, but it was not until 1893 that the national organization of these groups took the form of the present association. In 1928 there were 22 State associations and many local societies and churches in territory outside the State organizations. The general activities are carried on through four bureaus: Progressive Lyceums (Sunday schools); the Bureau of Phenomenal Evidence; the Bureau of Propaganda; and the Bureau of Education. The organization conducts the Morris Pratt Institute, Whitewater, Wis., and issues the periodicals *Progressive Thinker*, *Banner of Life, Reason*, and *The National Spiritualist*. Officers in 1928 were: President, Joseph P. Whitwell, St. Paul, Minn.; secretary, the Rev. Harry P. Strack, Washington, D. C.; treasurer, F. W. Constantine, Buffalo, N. Y.

SPITZBERGEN. See WEST SPITZBERGEN; also SVALBARD.

SPORTS. Articles covering the activities in the various sports during 1928 will be found under such titles as **ATHLETICS**, **BASEBALL**, **FOOTBALL**, **GOLF**, **OLYMPIC GAMES**, **RACING**, **TENNIS**.

SPROUL, WILLIAM CAMERON. American public official, farmer, manufacturer, and journalist, died at Chester, Pa., March 21. He was born at Octoraro, Pa., Sept. 16, 1870, and was graduated from Swarthmore College in 1891. For several years he was engaged in farming, and afterward he organized important iron and steel plants and developed railroads, mining, traction, and power enterprises in West Virginia. In 1896 he was elected to the Pennsylvania Senate as a Republican, and was reelected five times. He was elected Governor of Pennsylvania in 1919 and served until 1923. Mr. Sproul took an especial interest in the development of highways, and was known as "the father of good roads in Pennsylvania"; he brought about the adoption of a State road-building programme calling for the expenditure of \$50,000,000. At the Republican National Convention of 1920, Governor Sproul received the entire vote of his State for the presidential nomination, through seven ballots. Among his varied and extensive interests was the presidency of the *Daily Times*, Chester, Pa. and the *Morning Republican* of the same place. He was the owner of nearly 2000 acres of orchards in Pennsylvania. Governor Sproul was a trustee of Swarthmore College, and built and endowed the Sproul Observatory at the college. He received the degree of LL.D. from nine colleges and universities, including Swarthmore and the University of Pennsylvania.

SQUASH. See RACQUETS.

STABILIZATION OF THE FRANC. See FRANCE.

STANFORD UNIVERSITY. A non-sectarian institution for the higher education of men and women at Stanford University, Calif., founded in 1891 in memory of Leland Stanford, Jr. The enrollment for the autumn quarter of 1928 was 3478, and for the summer quarter, 1345. The faculty numbered 506. The productive funds of the university amounted to \$29,518,042, and the budget income for the year, including fees, was \$2,787,190. The library contained 490,000 volumes (including the Hoover War Library). Gifts received during the year were: For research and scholarships, \$235,312; special funds, \$7860; for new buildings, \$8168; for endowment, \$326,395. President, Ray Lyman Wilbur, M.D., Sc.D., LL.D.

STARS. See ASTRONOMY.

STATE INSURANCE. See WORKMEN'S COMPENSATION.

STATISTICAL ASSOCIATION, AMERICAN. An organization founded in Boston in 1830 to foster an interest in statistics and to promote scientific methods of collection and interpretation of statistical data. Among the committees maintained during 1928 to improve both public and private statistical work were: The Joint Advisory Committee on the Census, composed of six members, of whom three are appointed by the Association, to advise the Directors of the Census on important questions of statistical policy; the Committee on Governmental Labor Statistics, to standardize statistics on employment hours and earnings in the various States and in the Dominion of Canada; and the Committee on Institutional Statistics. The Committee on Social Statistics worked to improve statistical work in social organizations and the Committee on the Encyclopedia of the Social Sciences was engaged in the preparation of that Encyclopædia. The various Association chapters meet from time to

time in the leading cities of the United States and an annual meeting of the entire Association is held. The 1928 meeting was held at Chicago, Ill., Dec. 27, 1928. The official publication is *The Journal of the American Statistical Association*, a quarterly. The officers of the Association for 1928 were: President, Carl Snyder; vice presidents, Seymour L. Andrew, Raymond Pearl, Ralph Hurlin; counselors, James W. Glover, W. Randolph Burgess, and R. H. Coats; secretary-treasurer, Willford I. King; editor, Frank Alexander Ross. The headquarters of the Association are at 530 Commerce Building, New York University, 236 Wooster Street, New York.

STATISTICS. In our modern world the work of the statistician has become well-nigh indispensable to the conduct of almost every activity. Statistical analyses play important rôles in education, agriculture, insurance, marketing, transportation, banking, commerce, business, advertising, even retail selling. The work of such expert groups as the Bureau of the Census and the Bureau of Labor Statistics among governmental agencies and the Harvard Economic Society among private agencies is too well-known for comment. In the United States, the *Journal* of the American Statistical Association, in England the *Journal* of the Royal Statistical Society, and on the Continent the *Journal* de la Société de Statistique de Paris and the international *Metron* are continuously preoccupying themselves with the exposition of method as well as the results of statistical research in a hundred and one different pursuits. For example, one finds in these magazines articles on subjects as diverse as the following: "Arc Tangent in Trend Determination," "Statistics of Room Congestion," "The Causes of Illness at Different Ages," "The Vital Statistics of Wealth and Poverty," "Bankruptcy Risks by Professions," "The Population of Palestine and the Outlook for Zionism," etc., etc.

It would be impossible in the limits of a single article such as this to discuss the progress of statistical research for the past year with any degree of completeness or, in fact, intelligence. A compromise has been effected by the use of statistics in those articles in this volume where such analyses will help to discover trends. For example, the reader is referred to the following articles for statistical presentations that are of significance: CHILD LABOR, OLD-AGE PENSIONS, WOMEN IN INDUSTRY, COÖPERATION, STRIKES, WORKMEN'S COMPENSATION, CRIME, TRADE UNIONISM, IMMIGRATION, MARRIAGE AND DIVORCE, WELFARE WORK, UNEMPLOYMENT, FINANCE, AGRICULTURE, MATERNITY PROTECTION. In these articles will be found statistics referring to labor economics, vital statistics, crop production, etc., etc. In the paragraphs that follow are displayed in tabular form statistics of wages and the cost of living.

INDEX NUMBERS OF WAGES. The Bureau of Labor Statistics had compiled a series of index numbers of general wage rates (other than agricultural) beginning with the year 1840. These figures had been brought down to 1926 and are presented in the table on the following pages.

The International Labor Office, in order to satisfy the prevailing curiosity concerning the size of real wages in various countries, made such a comparative study for January, 1928, taking

the city of Philadelphia as representative of the United States. The index numbers are for real wages. The examination was limited to a few trades, i. e., building, metal, furniture, printing, and publishing, and the price data were limited to a few articles of food. The figures are necessarily rough, but they serve a value for comparative purposes.

INDEX NUMBERS OF WAGES PER HOUR, 1840
TO 1926 (EXCLUSIVE OF AGRICULTURE)
[Currency basis during Civil War period. 1913 = 100]

Year	Index	Year	Index
1840	33	1884	64
1841	34	1885	64
1842	33	1886	64
1843	32	1887	67
1844	32	1888	68
1845	33	1889	69
1846	34	1890	69
1847	34	1891	69
1848	35	1892	69
1849	36	1893	69
1850	35	1894	67
1851	34	1895	68
1852	35	1896	69
1853	35	1897	69
1854	37	1898	69
1855	38	1899	70
1856	39	1900	73
1857	40	1901	74
1858	39	1902	77
1859	39	1903	80
1860	39	1904	80
1861	40	1905	82
1862	41	1906	85
1863	44	1907	89
1864	50	1908	89
1865	58	1909	90
1866	61	1910	93
1867	63	1911	95
1868	65	1912	97
1869	66	1913	100
1870	67	1914	102
1871	68	1915	103
1872	69	1916	111
1873	69	1917	128
1874	67	1918	162
1875	67	1919	184
1876	64	1920	234
1877	61	1921	218
1878	60	1922	208
1879	59	1923	217
1880	60	1924	223
1881	62	1925	226
1882	63	1926	229
1883	64		

INDEX NUMBERS OF COMPARATIVE REAL
WAGES IN VARIOUS CITIES, JANUARY,
1928
[London, January, 1928 = 100]

City	General average index numbers Based on food only	With allowance for rent
Philadelphia	192	192
Ottawa	162	160
Copenhagen	109	109
Dublin	101	110
London	100	100
Stockholm	90	89
Amsterdam	82	82
Berlin	66	61
Paris	59	...
Madrid	55	...
Vienna	47	53
Łódź	47	48
Brussels	46	49
Rome	45	47
Varsaw	44	46
Tallinn	40	...
Lisbon	30	...

UNION WAGE RATES. The annual survey of the Bureau of Labor Statistics indicated that union wage rates in the United States were slightly higher for 1928 over 1927. The study, which included the wages of over three-fourths of a million organized workers, and covered most of the

time-work trades in 67 industries, showed that the average hourly wage for 1928 was \$1.159 as compared with \$1.154 in 1927. The following table shows the average hourly wage rates in a number of trade groups, comparing 1927 with 1928.

Trade group	Average hourly wage Increase, rate 1928 over 1927		
	1927	1928	1928 over 1927
Bakers	\$0.957	\$0.954	\$0.003 ^a
Building-trades workers	1.323	1.330	.007
Chauffeurs and teamsters and drivers	.704	.712	.008
Granite and stone cutters	1.321	1.335	.014
Laundry workers	.432	.447	.015
Linemen	.991	1.007	.016
Longshoremen	.817	.858	.041
Printing and publishing:			
Book and job	1.021	1.036	.015
Newspaper	1.190	1.220	.030
Average ^b	\$1.190	\$1.195	\$.005
Motormen and conductors	\$.682	\$.685	\$.003
Bus drivers	.700	.666	-.034 ^a
Grand average, all trades ^b	\$1.154	\$1.159	\$0.005

^a Decrease. ^b Not including pieceworkers.

The hours of labor averaged 44.9 in 1928 as compared with 45.4 in 1927. In May, 1928, the following was the length of the week for the trades studied: bakers, 47.4 hours; building trades, 43.5 hours; chauffeurs and teamsters, 54.8 hours; granite and stone trades, 44 hours; printing and publishing trades (book and job), 44.3 hours; printing and publishing (newspaper), 45.1.

Comparing 1928 with preceding years, it is interesting here to observe that the average hourly wage rate for 1928 was 0.4 per cent higher than the figure for 1927, 128.3 per cent higher than the figure for 1917, 160.6 per cent higher than the figure for 1913, 175.9 per cent higher than the figure for 1910, and 190.5 per cent higher than the figure for 1907. Translated into index numbers with the base of 100 at 1913, we find the following:

Year	Index numbers of Rate of wages per hour	Index numbers of Hours per full- time week	Year	Index numbers of Rate of wages per hour	Index numbers of Hours per full- time week
1907	89.7	102.6	1918	132.7	97.0
1908	91.0	102.1	1919	154.5	94.7
1909	91.9	101.9	1920	199.0	93.8
1910	94.4	101.1	1921	205.3	93.9
1911	96.0	100.7	1922	193.1	94.4
1912	97.6	100.3	1923	210.6	94.3
1913	100.0	100.0	1924	228.1	93.9
1914	101.9	99.6	1925	237.9	93.0
1915	102.8	99.4	1926	250.3	92.8
1916	107.2	98.8	1927	259.5	92.4
1917	114.2	98.4	1928	260.6	91.9

INDEX NUMBERS OF COST OF LIVING. The U. S. Department of Labor makes a special study of cost-of-living data for 32 American cities. These figures are collected in June and December of every year. Naturally, they are estimates in that the compilers of the figures must weigh the prices of the articles being used on the basis of some mythical family budget. The family budget used for weighing purposes was made in 1918-19 on the basis of an examination of the expenditures of 12,096 families. There is presented herewith the Department's index numbers for the cost of living from 1913 to June, 1928.

INDEX NUMBERS SHOWING CHANGES IN COST
OF LIVING IN THE UNITED STATES, 1913
TO JUNE, 1928

Date	Index Nos.	Date	Index Nos.
Average, 1913	100.0	December, 1922	169.5
December, 1914	103.0	March, 1923	168.8
December, 1915	105.1	June, 1923	169.7
December, 1916	118.3	September, 1923	172.1
December, 1917	142.4	December, 1923	173.2
December, 1918	174.4	March, 1924	170.4
June, 1919	177.3	June, 1924	169.1
December, 1919	199.3	September, 1924	170.6
June, 1920	216.5	December, 1924	172.5
December, 1920	200.4	June, 1925	173.5
May, 1921	180.4	December, 1925	177.9
September, 1921	177.3	June, 1926	174.8
December, 1921	174.3	December, 1926	175.6
March, 1922	166.9	June, 1927	173.4
June, 1922	166.4	December, 1927	172.0
September, 1922	166.3	June, 1928	170.0

MEETINGS. In November, under the auspices of the League of Nations, there was convened the *International Statistical Conference* at Geneva. This meeting was regarded as being so important that states not members of the League of Nations sent delegates. Such countries included the United States, Russia, Ecuador, and Mexico. The purpose of the conference was to attempt to standardize the collection of statistics so that they would be comparable on an international basis. The American delegation on which were E. Dana Durand, of the Department of Commerce, and Messrs. Estabrook and Hobson, indicated that Washington looked with favor on the creation of a permanent international statistical office. The international significance of statistics was strikingly shown by the complaint of the International Federation of Master Cotton Spinners that the publication of cotton-crop forecasts by the U. S. Department of Agriculture accounted for periods of stagnation throughout the whole world during a three-day interval before and a similar interval after these releases.

The *American Statistical Association* held its ninetyeth annual meeting at Chicago beginning December 27. (See above.) It is interesting to report the subjects of the general discussions to see how bewilderingly complex, and therefore specialized, the field of statistics has become: "The Stock Boom and the Value of Common Stocks," "What Do the Unemployment Figures Mean and How Can They Be Improved?" "Banking Policy and the Business Cycle," "Mathematical Statistics," "The Farmer's Income," "Social Costs of Accidents, Illness, and Old Age," "The New Institutes of Industry and Statistical Control of Production," "Regional Indexes of Trade," "Statistical Technique," "Index Numbers and the Measures of Value," "Recent Advances in Astronomy and the Use of Statistical Methods."

STATLER, ELLSWORTH MILTON. American hotel builder and manager, died at New York, April 16. He was born in Somerset County, Pennsylvania, Oct. 26, 1863, and received little formal education, being put to work at an early age as a stoker in a glass factory at Wheeling, W. Va. His first experience in the hotel business was gained as a bell boy at the McClure House, Wheeling, where he rose to become day clerk. He then purchased the billiard room and railway ticket concessions in the hotel and was successful in that field. He next conducted an unsuccessful restaurant at Buffalo, N. Y., and a rooming house at the Pan-American Exposition, Buffalo, in 1901, followed by a similar house at the Louisiana Purchase Exposition, St. Louis, Mo.,

in 1904. Mr. Statler's first large venture was the building of the Hotel Statler (now the Hotel Buffalo) at Buffalo, in which he introduced many innovations. The hotel was successful, and a chain of similar hostelrys followed, in Cleveland, Ohio, Detroit, Mich., St. Louis, Mo., and Boston, Mass. Mr. Statler also obtained a lease for the operation of the Hotel Pennsylvania, New York City. He was prominent in the affairs of hotel men's associations.

STEAMBOAT INSPECTION SERVICE, UNITED STATES. See SAFETY AT SEA.

STEAM BOILERS. See BOILERS.

STEAM ENGINE. No important progress was to be noted in this field, most of the advances being scored under STEAM TURBINES as discussed below.

STEAM TURBINES. In the steam turbine field, 1928 was notable for the number of exceptionally large units installed in central stations and the increased use of high back-pressure and bleeder turbines furnishing steam to process in industrial plants. Among the large units, there were two of 165,000 kilowatts, two of 160,000 kilowatts, one of 110,000 kilowatts, another of 94,000 kilowatts, and two of 75,000 kilowatts. Worthy of special mention is the 160,000-kilowatt tandem turbine being installed at the East River Station of the New York Edison Company, inasmuch as the single generator has two separate windings in alternate slots, each having a capacity of 80,000 kilowatts. These windings are not connected electrically but tie in with adjacent bus sections. Thus, half the load can be carried on one winding should the other go out of commission.

Details of design that received attention during the year included altered blade dimensions, improved methods of attachments, and refinements in blade finishing and in materials. Better blade materials made longer blades possible with attendant reduction in leaving losses at the last stage. Clearances have also been reduced and improvements have been made in generator cooling which has decreased the electrical losses.

The 208,000-kilowatt machine ordered for the State Line Station, near Chicago, and announced in 1927 was not in operation but was being installed.

It would appear that 75,000 kilowatts was about the limit for single-cylinder machines, 160,000 kilowatts for tandem-compound units, and 208,000 kilowatts for cross-compound turbines. None of these large machines operates on pressures higher than 600 pounds, 750° Fahr., although 55,000-kilowatt units were on order, the high-pressure elements of which would operate on 1200 to 1400 pounds. Those units operating on these high pressures were 10,000 kilowatts or under. Reheating between the high- and low-pressure elements was employed in all cases of 600 pounds or over.

The starting of steam turbines was another subject that received attention during the year. When a spindle has come to rest after the machine has been shut down, distortion often occurs during cooling because the bottom portion cools more rapidly than the upper. A number of cases of serious rubbing between stationary and moving blades, as well as several sprung spindles, led to the development of devices for cooling all parts of the spindle uniformly and thus avoiding distortion, so that the turbine could be put into operation in a minimum period.

One method for accomplishing this consists of a hydraulic barring gear by which the operator can turn the spindle 180 degrees at intervals. A high-pressure oil pump keeps the bearings floating during operation. A second method, which had proved satisfactory for large machines, is the use of a small motor which is thrown into gear with the spindle when the latter in slowing down has reached 25 to 30 r.p.m. This motor continues to rotate the spindle during the shut-down period and thus insures uniform cooling. See DYNAMO-ELECTRIC MACHINERY; POWER PLANTS, STEAM.

STEEL. See IRON AND STEEL; CHEMISTRY, INDUSTRIAL.

STEEL IN CONSTRUCTION. See BRIDGES.

STEINMETZ, JOSEPH ALLISON. American engineer and pioneer in the development of aviation, died at Philadelphia, Pa. July 11. He was born at Philadelphia, Mar. 22, 1870, and studied at Lehigh University, 1900. He was an assistant of Prof. Samuel P. Langley in producing special steel parts for early airplane engines, in 1900. From 1908 until his death he was the senior member of the firm of Janney-Steinmetz & Co., makers of seamless steel containers, and he was also president of the American Register Corporation and associated with the American Car & Foundry Company. He designed and patented numerous devices for aerial and submarine warfare, and was the founder and director of the School of Aircraft Building, Philadelphia, chairman of the committee on aeronautics of the American Society of Mechanical Engineers (1922-23), and president of the Aëro Club of Philadelphia (1915-21). Mr. Steinmetz located Hog Island as the site for a war shipyard, was a member of the Submarine Defense Association, of New York, 1917-19, and was sent overseas on special service for the War Industries Survey, 1918-19. He was also a member of the engineering division of the National Research Council, 1918, and in 1919 held the rank of major in Ordnance, U. S. Army Reserves.

STELLAR EVOLUTION. See ASTRONOMY.

STETSON, AUGUSTA EMMA. American Christian Science leader, died at Rochester, N. Y., October 12. She was born at Waldoboro, Me., about 1842, the daughter of Peabody and Salome Simmons. Having married Captain Frederick J. Stetson, in 1867, she lived in Europe for several years before her husband's death. She returned to the United States, and while studying elocution at the Blish School of Oratory, Boston, she became a friend and pupil of Mary Baker Eddy, the founder of Christian Science. Mrs. Stetson was graduated with the degree of Christian Science Doctor, from the Metaphysical College, Boston, in 1884, and she at first practiced healing in Boston. In 1885 she preached on alternate Sundays at The Mother Church, Chickering Hall, Boston, and the following year Mrs. Eddy sent her to New York City where she was among those who organized the First Church of Christ, Scientist. Mrs. Stetson was appointed pastor of this church in 1888, and her sermons soon attracted a congregation which rivaled that of The Mother Church. In 1895 Mrs. Eddy having eliminated sermons from the church service, Mrs. Stetson continued as first reader and so successful was she in her work that she and her followers consecrated a handsome new church in 1903 built at a cost of \$250,000. The Boston Christian Scientists, however, were afraid that Mrs. Stetson was trying to supplant Mrs. Eddy,

and her opponents accused her of unorthodox healing practices. The Mother Church revoked her license for three years in October, 1909, and after she had been tried for insubordination, the following month, she was dismissed from the church. When Mrs. Eddy died, in 1910, Mrs. Stetson predicted that her former teacher would return to earth, and she also repeatedly affirmed her belief in her own immortality. She spoke of herself as Mrs. Eddy's successor, and as the spiritual leader of the Christian Science Church, in her book, *Reminiscences, Sermons and Correspondence* (1913). She and her followers carried on an extensive advertising propaganda, through books, newspapers, and radio, to advance and defend Mrs. Stetson's Christian Science doctrines.

STEVENS, EMILY. American actress, died at New York, January 2. She was born at New York, in 1882. She was educated at the Institute of the Holy Angels, Fort Lee, N. J., and at St. Mary's Hall, Burlington, N. J. She came of a theatrical family, and her stage début was made in 1900, in the part of a maid in the production of *Becky Sharp* by Minnie Maddern Fiske, a cousin of Miss Stevens. She remained with Mrs. Fiske's company for eight years in a succession of minor parts, and later she played with Bertha Kalich and Grace George. Then, in 1909, she scored her first definite success in *Septimus*, in which George Arliss starred. This was followed by a period as leading woman with the late Holbrook Blinn (1872-1928), in *The Boss*. She was the first actress to play the part of Mary Turner in *Within the Law*, in Chicago, in which Jane Cowl made one of her greatest successes in New York. Subsequently Miss Stevens appeared as leading woman in a succession of plays, among them being *To-day*, *The Garden of Paradise*, *The Unchastened Woman*, *The Gentle Wife*, *Foot-Loose*, *Hedda Gabler*, *The Fugitive*, and *Fata Morgana*. Her greatest popular success was in *The Unchastened Woman*. Some of her plays failed to win popular approval, but her own acting was invariably convincing and successful.

STEVENS INSTITUTE OF TECHNOLOGY. A non-sectarian institution for the technical education of men, at Castle Point, Hoboken, N. J., founded in 1870. The enrollment for the autumn of 1928 was 476 and for the summer session of the same year, 88. There were 51 members on the teaching staff. The productive funds amounted to \$2,764,000, and the income for 1927-28 was \$321,000. The library contained about 19,000 volumes. During the year the Institute received \$66,000 in gifts. Dr. Frank L. Sevenoak, acting president, following the resignation in June, 1927, of Dr. Alexander C. Humphreys, retired Sept. 1, 1928. Harvey Nathaniel Davis, Ph.D., an alumnus of Brown University, and for nine years professor of mechanical engineering at Harvard University, was formally inaugurated as the third president of the Institute on November 23, at ceremonies attended by representatives of more than 100 colleges and universities, including 32 presidents, and 34 representatives of educational and scientific bodies.

STOCK EXCHANGE ACTIVITY. See FINANCIAL REVIEW.

STOCKS AND BONDS. See FINANCIAL REVIEW.

STOKERS. See BOILERS; POWER PLANTS, STEAM.

STONE. The stone group of minerals was one of the few groups which was able to main-

tain during 1927 the rapid pace set in production in the years immediately preceding, reporting significant gains for the year, due to the demand for this commodity by the building and paving industries, according to the U. S. Bureau of Mines. The output of stone, exclusive of that manufactured into lime, cement, and abrasive materials, or crushed into sand, amounted to 136,345,260 short tons, valued at \$198,661,622, an increase of 10 per cent over the 1926 output of 124,496,360 short tons. The increases in quantity took place in stone sold for curbing, rubble, crushed stone, agricultural limestone, riprap, manufacturing industries, and miscellaneous uses, while the decreases occurred in stone sold for construction, monumental stone, paving blocks, flux, and refractory. Building stone sales of 32,104,200 cubic feet showed a decrease of 4 per cent over the previous year, and consisted of: 17,340,690 cubic feet of limestone, valued at \$18,820,045, largely from the Bedford-Bloomington district in Indiana; 6,397,830 cubic feet of granite, a decrease of 22 per cent over 1926; sandstone, 3,995,370 cubic feet, an increase in quantity of 19 per cent over the previous year; and marble, 2,823,790 cubic feet, valued at \$10,739,228, a decrease of 2 per cent in quantity.

There was a general increase in sales of street and road material, although there was a decrease in paving blocks of 2 per cent. Stone sold for curbing amounted to 4,862,580 cubic feet, with a valuation of \$4,939,716, an increase of 10 per cent in quantity. Crushed stone, amounting to 94,948,770 short tons, with a valuation of \$97,474,267, showed an increase of 15 per cent in quantity, the largest increase coming in sales for concrete and road work, 17 per cent, while that used for railroad ballast increased 5 per cent.

The total value of stone imported into the United States for consumption in 1927 was \$4,536,407. Of this amount, \$2,521,917 represented the value of 958,429 cubic feet of marble, breccia, and onyx, as compared with a valuation of \$1,783,767 for 863,219 cubic feet imported in 1926. Total stone imports in 1926 were valued at \$3,523,578. Total exports of stone in 1927 were valued at \$2,094,585, divided as follows: Marble in blocks, rough or dressed, and other building stone, \$1,977,949, and other manufactures of stone, \$1,005,636. These figures compare with a total valuation of \$1,583,245 in 1926, divided as follows: Marble in blocks, etc., \$689,115, and various other manufactures of stone, \$896,130.

STONE AGE. See PHILOLOGY, MODERN.

STORMS. See METEOROLOGY.

STRAITS SETTLEMENTS. A British Crown colony in Malaysia, consisting of Singapore, Penang (with Province Wellesley and Dindings), and Malacca. The area is approximately 1600 square miles; population, according to the census of 1921, 883,769; estimated in 1926, 1,003,754. The estimates for the various parts in 1926 were as follows: Singapore, 217 square miles, with 502,021 inhabitants; Penang (with Province Wellesley and Dindings), 280 square miles, with 323,638 inhabitants; Malacca, 720 square miles, with 178,095 inhabitants. In 1926 there were 348,593 immigrants from China and 174,795 from southern India. The movement of population in 1926 was: Births, 33,694; deaths, 32,633. The seat of the Government is Singapore. In 1926 there were 274 schools (all government-aided), with an enrollment of 41,120 and an average attend-

ance of 38,332. The chief interest is commerce, mostly transit trade (the ports are free from customs duties). The centre of trade is Singapore.

The trade of the Straits Settlements during 1926 was as follows: Singapore, imports, £120,467,625, exports, £103,760,924; Penang, £40,634,036 and £37,440,920; Malacca, £6,003,461 and £8,636,497; Labuan, £358,563 and £395,680; Christmas Islands, £63,592 and £230,231; and Dindings, £131,792 and £491,498. The chief imports in that year, according to values, were: Para rubber, tin ore, rice, cotton piece goods and yarns, tobacco, cigars and cigarettes, vegetables and fruits, dried and salted fish, and sugar. The chief exports, also according to values, were Para rubber, tin, copra, pepper, and preserved pineapples. The budget for 1928 called for expenditures of 38,950,949 Straits dollars as against 32,916,545 for revenues. The anticipated deficit was attributable to extraordinary expenses on public works, which were expected to require over 7,000,000 dollars. The total number of merchant vessels entered at the ports of the colony during 1926, exclusive of native craft, was 11,898, with a tonnage of 18,979,478. The number of native craft was 31,272, with a tonnage of 1,113,737. Merchant vessels cleared, 1918, with a tonnage of 19,049,152; native craft cleared, 31,708, with a tonnage of 1,125,853.

The administration is under a governor, aided by an executive council of official members and a legislative council of official and unofficial members, the latter being nominated or selected by the chambers of commerce of Singapore and Penang. Governor in 1928, Sir Hugh Clifford, who is also High Commissioner for the Federated Malay States and Brunei, and British Agent for North Borneo and Sarawak. Under the administration of the Straits Settlements are the Christmas Islands, annexed in 1900, Cocos or Keeling Islands, annexed in 1903, and the colony of Labuan, annexed Jan. 1, 1907. See CHRISTMAS ISLANDS.

STRATHCLYDE, strāth'clīd, ALEXANDER URE. British jurist, former Lord Justice of Scotland, died at Cairndhu, Helensburgh, Scotland, October 2. He was born at Glasgow, Feb. 24, 1853, and after studying at Glasgow and Edinburgh universities he was called to the bar in 1878. He became a lecturer on constitutional law and history at the former institution in the same year, retaining that position for ten years. He was defeated as a Liberal candidate for Parliament from West Perthshire in 1892, and from Linlithgowshire the following year, but was elected by the latter constituency in 1895, serving until 1913. Having been appointed Solicitor-General of Scotland in 1905, Lord Strathclyde was made Lord-Advocate, in 1909. He became Lord President of the Court of Session, and Lord Justice-General in 1913, positions which he held until 1920, being of assistance to the Asquith administration through his knowledge of the land question. Besides being a King's Counsel, he was made a Privy Councillor, 1909, and was created Baron, 1914, and a Knight of the Grand Cross of the Order of the British Empire, 1917.

STRAUSS, RICHARD. See MUSIC.

STREET AND HIGHWAY SAFETY. See AUTOMOBILES.

STREETS. See ROADS AND PAVEMENTS; CITY PLANNING.

STRIKES AND LOCKOUTS. Mention has been made in the YEAR BOOK before of the ef-

ports of the U. S. Bureau of Labor Statistics to collect complete data on industrial disputes. The table that follows, reprinted from the *Monthly Labor Review*, presents the industrial disputes that began in and were in effect at the end of each month from January, 1927, to June, 1928. These figures were collected from newspapers, trade journals, and personal visits. There is no machinery in the United States for the compulsory reporting of strikes and lockouts.

THE BITUMINOUS COAL STRIKE. On July 18 the United Mine Workers abandoned the Jack-

sonville scale as a basis for negotiations and permitted to each of the districts the right to effect whatever wage agreements they could. In this fashion, with the complete defeat of the miners, ended one of the bitterest industrial conflicts since the World War. It will be recalled that the United Mine Workers had called the strike in the central competitive field, on Apr. 1, 1927, to enforce the Jacksonville scale which the operatives were seeking to abandon in view of the ruinous competition being offered by the non-union fields of West Virginia and Kentucky.

INDUSTRIAL DISPUTES IN THE UNITED STATES FROM JANUARY, 1927, TO JUNE, 1928

Month and year	Number of disputes		Number of workers involved in disputes		Number of man-days lost during month
	Beginning in month	In effect at end of month	Beginning in month	In effect at end of month	
January, 1927	37	18	5,915	2,287	58,125
February, 1927	65	45	9,756	5,717	115,229
March, 1927	74	67	13,142	8,182	214,283
April, 1927	87	88	202,406	199,701	5,265,420
May, 1927	107	116	22,245	200,702	5,136,006
June, 1927	80	88	18,957	196,323	4,863,845
July, 1927	65	63	33,994	199,287	5,308,123
August, 1927	57	53	8,150	198,444	4,999,751
September, 1927	57	58	12,282	196,829	4,945,702
October, 1927	50	58	13,024	82,095	2,724,117
November, 1927	27	51	5,282	82,607	2,040,140
December, 1927	28	54	4,281	81,229	2,129,153
January, 1928	43	62	18,263	81,676	2,135,092
February, 1928	47	61	33,602	104,883	2,155,559
March, 1928	34	63	7,145	78,362	2,343,415
April, 1928	62	70	143,834	134,382	4,884,430
May, 1928	72	74	15,138	136,094	3,526,608
June, 1928	40	64	20,941	134,406	3,580,719

sonville scale as a basis for negotiations and permitted to each of the districts the right to effect whatever wage agreements they could. In this fashion, with the complete defeat of the miners, ended one of the bitterest industrial conflicts since the World War. It will be recalled that the United Mine Workers had called the strike in the central competitive field, on Apr. 1, 1927, to enforce the Jacksonville scale which the operatives were seeking to abandon in view of the ruinous competition being offered by the non-union fields of West Virginia and Kentucky.

By midsummer the coal mines of Indiana, Illinois, and Iowa were withdrawn from the struggle on the basis of the acceptance of the Jacksonville scale, with the result that the miners of Pennsylvania and Ohio were left to fight the battle of the union against an unusually determined group of employers. The striking miners, who were the recipients of strike benefits of two to five dollars weekly, had the support of the anthracite miners and the general financial assistance of the American Federation of Labor. The industrial war was carried on with the weapons that society has learned to expect in such disputes. Miners were evicted from their homes, injunctions were obtained from the courts to prevent assemblage and picketing, and armed guards and agents menaced the strikers.

On Apr. 1, 1928, a minority group in the union held a convention and organized the Save-the-Union Movement. The movement, which was under the leadership of John Brophy, pointed out that the United Mine Workers had weakened the whole strike by permitting the Illinois and Indiana miners to withdraw, had not resolutely enough fought the issuance of injunctions, maintained picket lines, etc. The Save-the-Union Committee appealed to the Illinois miners to join the strike once more. The coal and iron police

announced the formation of the National Miners Union. However, in September, when the newly formed union attempted to meet in Pittsburgh, it was not given police protection; a large number of delegates were beaten up and the convention was made to terminate by the sheriff of Allegheny County, who declared that no meetings of National Miners would be permitted in Pittsburgh.

In 1922 the United Mine Workers had 500,000 members; it was computed that in 1928, at the end of the strike, only 100,000 members were left. How disastrously the strike had ended may be seen from the fact that the miners of Illinois were compelled to accept a wage scale of \$6.10 (they had won the Jacksonville scale of \$7.50 in 1927), the Pennsylvania miners had to accept a scale of \$5 as did also the Ohio miners. The miners were completely under the thumbs of the operators with the spread of the open shop and the presence of a surplus of 100,000 miners.

OTHER STRIKES. A strike involving 6500 persons was begun in *Haverhill*, Mass. among the *shoe workers* on January 19 as a result of an attempted wage cut by the employers. The stoppage succeeded in tying up all the shoe plants of the city. The strike was settled in ten days with the wage scale of the previous year restored. On February 20 there broke out in *New York City* a strike that involved some 25,000 workers in *cleaning and dyeing* establishments, as well as the proprietors of about 15,000 retail stores. The purpose of the strike was the stabilization of the industry and the ending of cutthroat competition. The strike ended officially on March 10 with the employees generally successful. On February 29, the *paper-box* makers of *New York City* went out on strike for union recognition and a standard weekly wage. About 1500 workers were in-

volved. Though the workers had the sympathy of the public, the strike did not end successfully for the operatives in view of the fact that the drivers made a settlement with their employers, in which they surrendered their chief demands, just as victory seemed assured.

On April 16, the *cotton textile* operatives of *New Bedford*, Mass., called a general strike in reply to an announced wage reduction of 10 per cent. The workers refused to postpone their strike vote when the manufacturers promised to put off the wage cut and 25,000 operatives went out in 25 plants. Only one-third of the strikers were reported to be unionized. After a terrible struggle of 25 weeks, on October 6 the unions voted to return to the shops with a wage cut of 5 per cent but the promise of a 30 days' notice of future wage reductions. All attempts at arbitration had failed including one based on a scheme for speeding up production with more pay guaranteed. This the workers had rejected, insisting that the *sine qua non* of arbitration had to be the restoration of the former salary scale. The strike received the support of the United Textile Workers of America.

In *New York City*, on April 3, approximately 2000 union *barbers* went on strike for higher wages. By May 25 all the master barbers had given in and the strike had been won. Some 1500 granite *quarrymen* of *Maine*, who went out on strike April 2, for an increase of 5 cents per hour, settled with their employers at a wage increase of 2 cents an hour, the signing of an agreement for three years and the fixing of a 44-hour week with a half-day on Saturday. May 16 saw about 1000 *dental workers* employed in the mechanical dental laboratories of the metropolitan district of *New York* go out on strike for wage increases, extra pay for overtime, minimum wage scale of \$25 weekly, and a 44-hour week. The workers formed a new union, Dental Laboratory Workers' Union. The strike was not successful. During May the *oil refining workers* of *Bayonne* successfully struck for the improvement of working conditions. Some 2100 *union carpenters* of *Buffalo* were out on strike June 1 to June 7 and were successful in their demand for higher wages.

On June 10 about 465 *artist's models and manikins* went out on strike in *Chicago* for more wages, better working conditions, and decent environment. The strike ended successfully in two days. A five-hour day was established with a rest period of 15 minutes in each hour. Wages were fixed at \$3 per hour. The *collar makers* of *Troy*, N. Y., some 1000 strong, struck on July 9 because of a disagreement as to a method of pay. A compromise was effected by which the piece-rate method of pay was retained. The workers reported to their benches each day but refused to turn a wheel.

CANADA. Reports from Canada indicated a state of industrial peace very much similar to that existing in the United States. For example, in 1927 the time lost in strikes and lockouts was less than in any year after 1915 and the number of employees involved was less than in any year since 1916. No single strike in 1927 involved more than 5000 employees nor did any strike lose more than 50,000 working days. In 1927, there were 79 strikes in progress in which 22,683 workers were involved and in which 165,288 days were lost. This state of affairs may be compared with the year 1919 (the

stormiest since 1913) where 298 strikes involved 138,988 workers and in which the total number of days lost was 3,942,189 days. For 1913 the figures had been 113 strikes, 39,536 workers, and 1,287,678 days lost.

BUENOS AIRES. During 1927, the Department of Labor of Argentina reported, there were 56 strikes in the Federal capital in which 36,888 persons were involved. The number of days lost totaled 363,492 and the monetary loss was 2,087,730 pesos (the peso was worth 96.3 cents). The following industries were involved: Bakery workers (3500), dye workers (250), textile workers (600), boot and shoe workers (1053), woodworkers (591), metal workers (85), electricians (250), construction workers (621), paper-box workers (68), printing-trades workers (370), restaurant waiters (90), slaughter-house workers (10), chauffeurs (25,005), other transport workers (4395).

See also LABOR ARBITRATION AND CONCILIATION.

STRONG, BENJAMIN. American banker, died at New York, October 16. He was born at Fishkill-on-Hudson, N. Y., Dec. 22, 1872, and after attending public schools in Montclair, N. J. became a clerk in a New York bank. He was made secretary of the Atlantic, and of the Metropolitan Trust companies. Appointed to a similar position in the Bankers Trust Company, in 1904, he later became vice president, and in January, 1914, he was made its president. He was chosen to the first governorship of the Federal Reserve Bank of New York, on Nov. 16, 1914, and, serving as chairman of the open-market-investment committee, he led in the formation of the Federal Reserve policy, during the system's first difficult years at the time of the World War. Mr. Strong studied war finance in England in 1916, and after the United States entered the War, he conducted Liberty Loan drives. After 1918 he made frequent trips to Europe, in order to consult foreign bankers and to discuss international banking, especially as it concerned post-war currencies and exchanges. He was credited with initiating Federal Reserve Loans which were instrumental in stabilizing financial conditions in Poland, Germany, England, Belgium, Prussia, France, and Italy. Mr. Strong received the LL.D. degree from Princeton University in 1918, he was made a member of the French Legion of Honor in 1919, and Poland honored him with the highest rank in the Order of Polonia Restituta, in 1927.

STUART, LESLIE. (THOMAS AUGUSTINE BARRETT). English composer, died at London, March 27. He was born at Southport, England, Mar. 15, 1866. He showed early skill as an organist, and at fifteen sat at the manual in St. John's Roman Catholic Cathedral, Salford. He played here for seven years, and then for seven years more was organist of the Church of the Holy Name, Manchester. It was while playing in the church that the idea of his greatest success, *Florodora*, came to him, and he abandoned the organ in 1896 to go to London. There he wrote his first song, "Louisiana Lou," interpolated by Miss Elaine Terriss with success in *The Shop Girl*. Another song success was "Soldiers of the Queen," with a fine marching lilt that made it a great favorite with the men in the Boer War. "On the Road to Tipperary" was also a famous production of Stuart's. His comic operas, *Florodora*, *The Silver Slipper*, *The School Girl*, *The*

Belle of Mayfair, Havana, The Slim Princess, and Peggy, brought him fame and fortune, but he did not retain the latter and was adjudged a bankrupt in 1912. He declared that he had been ruined by song pirates. Mr. Stuart visited the United States in 1917 and 1921. For a few years preceding his death, he appeared in vaudeville, playing his own compositions.

STUDENTS IN UNIVERSITIES AND COLLEGES. See UNIVERSITIES AND COLLEGES.

STUDY, COURSES OF. See EDUCATION.

SUBMARINE TORPEDO BOAT. See NAVAL PROGRESS.

SUBWAYS. See RAPID TRANSIT.

SUDAN, ANGLO-EGYPTIAN. A territory in the Nile region of Africa, extending south from Egypt to British East Africa and the Belgian Congo; bounded on the east by the Red Sea, Eritrea, and Abyssinia, and on the west by French Equatorial Africa; under British authority. Area estimated at 1,014,400 square miles; population in 1926 estimated at 7,005,966. Capital, Khartum, with a population of 30,797; other cities, Omdurman, 78,624; Khartum North, 14,319. On Jan. 1, 1927, the elementary, vernacular schools numbered 88 with about 8200 pupils; there are also 11 primary schools with 1200 pupils.

The Sudan is the chief source of the world's supply of gum arabic. In 1926 the exports of this product amounted to 22,744 tons valued at £844,198. Another important crop is cotton, which competes with the best Egyptian and American product. The total area under cotton in 1926 was 208,539 acres, and the crop of 1926-27 was estimated at 130,000 bales (478 pounds each); that for 1927-28 at 110,000 bales. Other products include sesame, senna leaves and pods, ground-nuts, dates, hides and skins, salt, and gold. Of all the grain crops, the most important is durra, which is the staple foodstuff of the inhabitants. In an average year the production of this cereal reaches almost 200,000 tons. Large quantities of ivory are exported and a large quantity of meat is supplied to Egypt each year. In 1925 there were in the Sudan approximately 20,500 horses, 345,000 asses, 2000 mules, 1,500,000 cattle, 5,250,000 goats and sheep, and 418,150 camels. Imports in 1927 totaled £E6,155,310 and exports and reexports £E5,229,420. Great Britain easily leads in Sudan's foreign trade, buying over three-fourths of its exports and supplying nearly one-third of its imports.

The budget estimates for 1927 balanced at £E5,660,000. The total length of railway open to traffic is approximately 1728 miles, and there is regular service by government passenger and cargo steamers for about 2500 miles on the Nile and its tributaries. Under a convention signed at Cairo, Jan. 19, 1899, the region south of the 22d parallel of latitude is administered by a governor-general appointed by the Egyptian Government with the assent of Great Britain. The Sudan has been divided into 15 provinces, each under a governor. Since 1910 the governor-general has been assisted by a council. The Governor-General in 1928 was Sir John L. Maffey.

SUDERMANN, zoo'dër-män, HERMANN. German dramatist and novelist, died at Berlin, November 21. He was born at Matzicken, East Prussia, Sept. 30, 1857, and studied at the universities of Königsberg and Berlin, specializing in

history, philology, and literature. After completing his formal study, he undertook the editorship of a political weekly in Berlin, but before long decided that his opinions were too radical for the paper, and resigned. Having already published several short stories, he determined to live by writing, and started what he later called his "bread-and-cheese existence," during which he wrote a moderately successful book of short stories, *Im Zwielicht*. He published *Frau Sorge* in 1887, a tale of duty and of romance, which was translated into English as *Dame Care*, and subsequently ran into more than one hundred and twenty-five editions. His first play, *Die Ehre*, produced in Berlin in 1889, brought him immediately to world-wide attention by its satirical attack on the affectations of current society. After his first successes, Sudermann wrote: the comparatively realistic novel, *Der Katzensteg*, which was translated under the title of *Regina*; an amusing short story of bourgeois life, *Iolanthes Hochzeit*; and a novel of moral psychology, *Es War*. He devoted himself chiefly, however, to his most effective form, the drama.

Sudermann's plays, which were produced in many countries, were rendered more memorable by such actresses as Sarah Bernhardt, Helena Modjeska, and Eleonora Duse. They include the sensational piece, *Sodoms Ende* (1890); and what has been considered Sudermann's greatest play, *Heimat* (1893), translated as *Magda* (1895). This was followed by the inferior *Die Schmetterlingsschlacht* (1894); and the striking but disagreeable play, *Das Glück im Winkel* (1895). He then wrote, in 1896, three single acts called *Moritur*, and a popular one-act play, *Fritzchen*. These were followed in 1898 by a realistic interpretation of the story of St. John the Baptist, *Johannes*, and an ethical mystery, *Die drei Reiherfedern*.

Sudermann was acclaimed for his powerful depictions and accomplished technique and, with Gerhart Hauptmann, was recognized as significant in the development of modern German literature. His protests were against conventional, artificial standards, and as society grew less restricted Sudermann's problems were solved and forgotten. His later plays, therefore, were socially less important than his earlier, critics having marked the change with *Die drei Reiherfedern*. It is a matter of debate whether those written after 1898 suffered or were improved by having less bombastic theses. The best known are *Johannisfeuer* (1900); *El lebe das Leben* (1902); *Der Sturmgesele Sokrates* (1903); *Das Blumenboot* (1904), produced 1906; *Stein unter Steinen* (1905); a group of plays called *Rosen* (1907), comprising *Die Lichtbändü*, *Margot*, *Der letzte Besuch*, and *Die ferne Prinzessin*; another collection of one-act plays, the *Strandkinder* (1909). *Der Bettler von Syrakus* (1909); *Die Lobgesänge des Claudian* (1913); and *Die gutschnittene Ecke* (1916).

It is thought that Sudermann's post-war writings suffer from his lack of sympathy with altered conditions. Several, however, are noteworthy, including: a dramatization of *Der Katzenschen* (1917); *Das deutsche Schicksal* (1921), three plays with the titles, *Heilige Zeit*, *Opfer*, and *Notruf*; an autobiography, *Das Bilderbuch meiner Jugend* (1922), *Wie die Träumenden* (1923); and *Der tolle Professor* (1926), as well as histories of the drama and the novel.

SUEZ CANAL. The reports on Suez Canal traffic for 1927 showed unprecedented activity during the year, both in number of passages of ships, which amounted to 5,545, with a net tonnage of 28,962,000, and in the movement of merchandise which amounted to 29,524,000 gross tons. In comparison with 1926, these figures show a gain of 2,902,000 tons. Total transit and navigation receipts were 208,685,837.34 gold francs, or 11 per cent above the previous high record established in 1925. Practically all of the countries east of the Suez Canal contributed to the increase for 1927, with British India leading, as the source and destination of more than 9,000,000 tons net, or an increase of 1,267,000 tons, as compared with 1926. India was followed by China and Japan, the region of the Persian Gulf, Australia, Dutch East Indies, East Africa, and Siberia, in the order named. The five principal flags represented in Canal traffic which exceeded their previous high records were the British, with over 16,000,000 net tons; the Dutch with over 3,000,000 tons; the French with 1,807,000; the Italian with 1,514,000; and the Norwegian with 662,000 tons. The order of importance, however, of the principal flags represented in the canal was the British, Dutch, German, with 2,764,000 tons, French, and Italian. Of the total net tonnage of 28,962,000 passing through the canal, the north-south traffic accounted for 13,567,000, or an increase of 1,471,000 tons, as compared with 1926, and the south-north traffic amounted to 15,398,000 tons, or a gain of 1,431,000 tons, the increase amounting to 2,920,000 tons, with the greatest percentage increase taking place in the north-south traffic as compared with figures for the previous year.

The accompanying table gives the commercial statistics by flags for Suez Canal traffic during the year ending Dec. 31, 1927:

SUEZ CANAL TRAFFIC *

Flag	No. of Transits	Net Tons
American	111	915,269
Argentinean	1	1,777
Belgian	24	131,591
British	3,085	22,937,110
Czechoslovakian	1	1,834
Danish	65	389,444
Dutch	575	4,173,380
Ecuadorian	2	4,538
Egyptian	4	6,234
Finnish	2	10,003
French	343	2,612,822
German	529	3,840,183
Greek	66	261,672
Italian	332	2,085,925
Japanese	152	1,241,315
Jugo-Slavian	7	37,940
Norwegian	142	890,796
Portuguese	1	7,355
Russian	13	81,037
Siamese	1	1,066
Spanish	11	44,500
Swedish	72	443,444
Turkish	6	8,472
Total	5,545	28,962,000

* Compiled from Suez Canal *Bulletin*, Feb. 25, 1928, for all ships passing through the Canal during 1927.

Upon comparing the gross tonnage of merchandise carried through the Canal for 1925, 1926, and 1927, it is found that the 1927 total was 29,524,000 tons, or 2,946,000 tons in excess of the previous high record set in 1925, but 4,105,000 tons in excess of 1926 tonnage. East-bound (north-south) traffic made a gain of 13 per cent, or approximately 1,300,000 tons and con-

sisted of such commodities as metals and machinery, railroad materials, coal, cement, salt, fertilizers, textiles, petroleum, wood pulp and paper, and refined sugar. Metals and machinery were consigned principally to India, Japan, the Dutch East Indies, and China; railroad materials showed a marked increase chiefly in the case of consignments to India and East Africa; and the increase in petroleum shipments came from Russia, while Rumanian petroleum showed a considerable decrease as compared with 1928. Among the leading commodities in the west-bound (south-north) traffic were cereals, amounting to 3,417,000 tons, or a gain of 1,327,000 tons; mineral oils, 3,158,000 tons; oleaginous products, 3,138,000 tons; textiles, 1,864,000; rubber; tea; sugar cane. There was also a marked increase in the amount of wheat shipped from Australia through the Canal; Persia figured prominently in shipments of mineral oil; and Vladivostok and Dairen accounted for the gains made in oleaginous products.

An interesting feature of the canal traffic in 1927 was the increasing importance of motor-vessel navigation, which rose to 3,585,000 tons net, corresponding to 12.3 per cent of the total transits, an increase of 1,063,000 tons over 1926. The number of motor vessels engaged in navigation through the Canal in 1927 was 639, or a gain of 184 over the previous year, the greatest tonnage registered by a motor ship making the transit being that of the *Asturias*, a new English vessel of 17,172 tons net which was on a tourist cruise.

Passenger traffic for 1926 and 1927, as classified below, shows a gain of 53,886 for 1927, the largest gain being made in north-south passages:

	1926	1927
Military:		
British	36,575	65,660
French	19,749	25,524
Italian	16,217	15,428
Dutch	320	374
Portuguese	121	146
Norwegian	15	.....
Japanese	.....	3
Civil Passengers	209,294	216,619
Specials (Principally pilgrims and emigrants)	4,141	16,564
Total passengers on boats	286,432	340,318

SUGAR. The world production of sugar for the season 1928-29, as estimated by Willett and Gray, was 26,600,600 tons, compared with 25,277,916 tons in 1927-28, and 23,733,172 tons in 1926-27. The expectation, therefore, was for a crop for 1928-29 nearly one and one-third million tons larger than for the preceding year. Of the total production, 17,567,600 tons was from sugar cane and 9,033,000 tons from sugar beets.

The estimated production of sugar from cane by the leading countries was as follows: Louisiana, 150,000 tons (more than double that of the preceding year); Porto Rico, 620,000; Hawaii, 830,000; Virgin Islands, 7500; Cuba, 4,900,000; British West Indies, 227,000; French West Indies, 65,000; Santo Domingo, 345,000; Mexico, 170,000; Central America, 92,000; Brazil, 675,000; Argentina, 365,000; Peru, 345,000; Demerara, 109,000; other South American countries, 57,400; British India, 2,900,000; Java, 2,944,200; Formosa and Japan, 750,000;

Philippine Islands, 675,000; Australia, 530,000; Fiji Islands, 108,000; and all Africa, 686,500.

The estimated production of sugar from beets was: United States, 925,000 tons (refined); Canada, 33,000 (refined); Germany, 1,725,000; Czechoslovakia, 1,050,000; Austria, 110,000; Hungary, 210,000; France, 860,000; Belgium, 260,000; Holland, 310,000; Russia and the Ukraine, 1,380,000; Poland, 700,000; Sweden, 160,000; Denmark, 165,000; Italy, 380,000; Spain 238,000; Great Britain and Ireland, 223,000 (refined); Jugo-Slavia, 127,000.

The area in sugar beets in the United States declined about 75,000 acres compared with the preceding year, and the production of beets fell off correspondingly. Curly-top disease, transmitted by the sugar-beet leafhopper, continued to be a serious menace, but encouraging progress was reported in the development of varieties resistant to the trouble. The Louisiana cane crop occupied an area of about 157,000 acres compared with 90,000 acres the preceding year. The crop showed a high sucrose content, well above 13 per cent, and running up to over 15 per cent, indicating a yield of about 180 pounds of sugar per ton of cane. The tonnage yields also were high, the combined result being a sugar production twice that of the preceding season. Much of the improvement is attributed to the introduction of new varieties of sugar cane, although the need remains for developing varieties more resistant and better adapted.

Following the conclusion that New Guinea was the native home of sugar cane, the U. S. Department of Agriculture sent an expedition, headed by Dr. E. W. Brandes, to search the wilds of that country for disease-resistant varieties. A large amount of material was secured which will be tested and used for breeding.

After several years of trial, Cuba decided not to continue in 1929 the restriction of the harvested sugar area. Doubt was expressed as to whether the regulation of the crop had been of any benefit. It did not have the effect of raising prices to a level satisfactory to the producers of sugar; but, on the other hand, unrestricted production might have been accompanied by still lower prices. Many of those opposed to the official limitation of production believed that a strong, centralized marketing organization was needed and urged maintenance of the Sugar Export Corporation.

Negotiations looking to a plan for restricted sugar production by leading countries failed because of the attitude of Cuba and Java. This led to the cancellation of the International Conference originally announced for October. See **CHEMISTRY, INDUSTRIAL**; and for sugar analysis, see **CHEMISTRY, under Analytical Chemistry**.

SULPHARSENIDE. See **CHEMISTRY, under Mineralogical Chemistry**.

SULPHUR. The production of sulphur in the United States in 1928 amounted to 1,981,873 long tons, a decrease of 6 per cent from 2,111,618 tons produced in 1927 as reported by the U. S. Bureau of Mines after a canvass of the various producers. The shipments in 1928 amounted to 2,082,924 tons valued at approximately \$37,500,000 as compared with 2,072,109 tons valued at approximately \$38,300,000 in 1927. The stocks on hand at the mines decreased approximately 100,000 tons in 1928 and totaled about 2,000,000 tons on Dec. 31, 1928, the smallest amount since 1921. Texas, as usual, was the chief producer and

accounted for 99.88 per cent of the total production in 1928, and with the shipments of sulphur from stocks in Louisiana for 99.87 per cent of the shipments. Nevada and Utah reported larger shipments. The Texas production included that from two new properties, namely, those of the Union Sulphur Company at Wharton, and the Duval Texas Sulphur Company at Benavides. The average quoted price for sulphur throughout the year was \$18 a ton f. o. b. at the mines; while open prices were \$1 a ton higher, and the prices for sulphur for export was given as \$22 a ton at Atlantic ports. Sicily was next to the United States as a producer of sulphur in 1928, its output being estimated at about 250,000 tons or approximately the same amount as in 1927.

The exports of sulphur from the United States in 1928 totaled 685,051 long tons, valued at \$14,345,075, of which 159,644 tons went to Canada, 125,659 tons to Germany, 109,348 tons to France, 85,500 tons to Australia, 48,928 tons to The Netherlands, 44,098 tons to the United Kingdom, and 22,801 tons to New Zealand. The exports of sulphur in 1928 were less than in 1927, when they amounted to 789,274 tons, this amount being the highest ever recorded, with the exports for 1928 second. The exports of refined, sublimed, and flowers of sulphur increased from 31,419,221 pounds, valued at \$544,373 in 1927 to 44,536,508 pounds valued at \$706,766 in 1928. In 1928, 3938 long tons of sulphur and sulphur ore, practically all from Canada, were imported.

SUMATRA. See **DUTCH EAST INDIES**.

SUN. See **ASTRONOMY; PHYSICS**.

SUNDAY SCHOOL UNION, AMERICAN. A volunteer association composed of members of different denominations of the Protestant church, whose object is to establish and maintain Sunday schools and to publish and circulate moral and religious publications. It was established in 1817 as the Sunday and Adult School Union. Through the contributions of individuals, churches, and Sunday schools, it sustains missionaries and supports its general work, which is carried on by 13 districts. In the year ending Feb. 29, 1928, 781 schools were organized and 594 schools reorganized, with a total of 4426 teachers and 42,474 scholars. There were 194 Young People's societies; 152 preaching stations opened; 15 churches of various denominations organized; and 13 churches built. During 1928, the Union commissioned 201 missionaries, who, while exploring new territory or working in districts previously covered, visited 203,007 families in their homes and distributed 4,533 Bibles, 5,956 New Testaments, and 6,350 copies of the Gospel of St. John. The enrollment in teacher-training classes during the year was 536 and daily vacation Bible schools were held in 507 rural communities, with an enrollment of 13,923 pupils. The income for the year ending Feb. 29, 1928, was \$598,629, and expenditures, \$575,045.

The Union publishes and circulates books and supplies needed by the schools and homes which it serves. The total number of books, booklets, maps, charts, and other Sunday school requisites issued during the year was 176,538. The Union circulated 12 Sunday school periodicals, weekly, monthly, or quarterly, for officers, teachers, and scholars to the number of 1,908,174 copies. The most important of the publications is the *Sunday School World*. The officers in 1928 were: President, E. Clarence Miller; vice presidents,

James M. Snyder, Barton F. Blake, and Robert L. Latimer; treasurer and recording secretary, John H. Talley; secretary of Missions, G. P. Williams; editor of publications, James McConaughy. National headquarters are at 1816 Chestnut Street, Philadelphia, Pa.

SUPERPHOSPHATE. See FERTILIZERS.

SURGEONS, AMERICAN COLLEGE OF. A college, or guild (not a teaching institution), organized in 1913 by some 500 surgeons of North America representing every branch of surgery. The object of the college is "to elevate the standard of surgery, to provide a method of granting fellowships in the organization, and to educate the public and the profession to understand that the practice of surgery calls for special training, and that the surgeon elected to fellowship in this college has had such training and is properly qualified to practice surgery." Membership is on the basis of merit only, and applicants for fellowship are examined with reference to professional ability and moral and ethical fitness. Each applicant must further submit one hundred case records, of which fifty must be complete records of major work which he himself has done and for which he was the responsible surgeon, while the remaining fifty are composed of case histories in abstract of major operations at which he was the responsible or assisting surgeon. The membership in 1928 had reached 8000 and included outstanding surgeons of the United States, Canada, and the Latin-American countries. The college, in 1927, owned property valued at \$1,100,000 and had an endowment fund of approximately \$800,000. The activities of the college are financed from initiation fees and yearly dues of the Fellows, augmented by outside contributions.

The organization sponsors clinics held at the annual meeting of the Clinical Congress of the American College of Surgeons, and miniature clinical congresses held in various States and provinces at which the work of local doctors is observed, scientific papers are presented, and questions of interest to the lay public discussed. The college in 1917 initiated a hospital standardization programme which set definite professional requirements as to organization, diagnostic facilities, and methods of procedure, and which provides for a careful annual survey of all hospitals with thirty-five beds and over. In 1917, when the first survey was made, of the 692 hospitals of 100 beds and over, only 89, or 12.9 per cent, were fully or conditionally approved. By 1927 there were 2,581 hospitals of 35 beds and over on the visiting list and of these, 1803, or 69.9 per cent, were fully or conditionally approved. The college maintains a library and department of literary research to further the standardization of literature on surgery and closely allied subjects, and to encourage the wider reading and study of scientific material.

The official journal of the College is *Surgery, Gynecology and Obstetrics*. Officers for 1928 were: President, Dr. George D. Stewart, New York City; president-elect, Dr. Franklin H. Martin, Chicago; vice presidents, Dr. John Chalmers Da Costa, Philadelphia, and Dr. Herbert P. H. Galloway, Winnipeg; and treasurer, Dr. Frederic A. Besley, Waukegan, Ill. Dr. Franklin H. Martin was director general of the college and Dr. Malcolm T. MacEachern and

Dr. Bowman C. Crowell, associate directors. The headquarters are at 40 East Erie Street, Chicago, Ill.

SURGERY. Any improvement in the direction of overcoming shock, whether traumatic or operative, should be mentioned under progress in surgery. In the *Journal of the American Medical Association* for June 9, 1928, Dr. Preston A. Wade of Dr. Gibson's surgical service at the New York Hospital, announced that the addition of insulin to the dextrose solution ordinarily used to antagonize shock appears to represent a decided addition to our resources. In 18 months it was used on 40 patients, of whom 18 suffered from traumatic, and 12 from post-operative, shock, the others representing an indeterminate group in which shock symptoms precede a fatal termination. The most striking improvement was seen in traumatic shock where nine patients responded permanently and four temporarily to the treatment, death supervening from causes other than shock. Of 12 cases of the post-operative type, five responded in a satisfactory manner. Other cases of shock did not benefit at all from the treatment, nor was a favorable result anticipated in ante-mortem shock. It is of course impossible to prove by figures that this treatment is superior to the older methods, but the character of the response is certainly more impressive to the beholder. Much depends on the seasonableness with which the injections are practiced. One unit of insulin should be added to 3 gms. of dextrose in 1000 cc. of infusion.

SURINAM. See DUTCH GUIANA.

SVALBARD. An arctic archipelago in the Eastern Hemisphere, area 25,000 square miles, formerly known as Spitzbergen. It comprises all lands between 10 and 35 degrees east longitude and between 74 and 81 degrees north latitude. By the Treaty of Paris, Feb. 9, 1920, it was placed under the full and absolute sovereignty of Norway. The principal islands are West Spitzbergen, usually called Spitzbergen. Northeast Land, Barents Island, Edge Island, Wiche Islands, Hope Island, and Prince Charles Foreland. Norway assumed control in 1925 and appointed a governor, who lives at Green Harbor with a small staff. As all industries are conducted on Spitzbergen, they are treated under West Spitzbergen.

SVEVO, ITALO. Italian novelist, died suddenly in September. Born Ettore Schmitt at Trieste, Dec. 19, 1861, he lived in his native city as a paint merchant, writing three novels under the pen name of Svevo, which anticipated the analytical methods of James Joyce, Marcel Proust, and Valéry Larbaud. As D'Annunzio's exuberant style dominated the literary taste of the period, Svevo's psychological novels, *Una Vita* (1893) and *Senilità* (1898), received little popular attention, although they were favorably reviewed. He next published, in 1923, *La Coscienza di Zeno*, which immediately attracted attention in Italy. His friend, Joyce, and others, then undertook to acquaint the world with Svevo's dialectic art, and his work had just commenced to provoke universal discussion at the time of his death. See ITALIAN LITERATURE.

SWARTHMORE COLLEGE. A non-sectarian institution for the higher education of men and women at Swarthmore, Pa., founded in 1864 by the Society of Friends. The 1928 autumn enrollment was 540 full-time students, of

whom 275 were men, and 265 women. The teaching staff numbered 70. The endowment and productive funds amounted to \$3,700,000. The library contained 60,000 volumes. Additions to the physical plant during the year included the completion of the Friends Historical Library and of the Bartol Research Laboratory of the Franklin Institute, devoted to research in physics. Appointments to the faculty included: Professor Lucius R. Shero as professor of Greek; Dr. Duncan Graham Foster, as assistant professor of chemistry; Trayer S. Anderson as assistant professor of history; and the return of Frederick S. Klees as instructor in English, after a year on the faculty of Brown University. At the Founder's Day exercises on October 27, several additions to the endowment funds were announced, including an anonymous gift of \$100,000. President, Frank Aydelotte, LL.D.

SWAZILAND, swä'ze-länd. A British protectorate in South Africa, situated north of Zululand, at the southeastern corner of the Transvaal; formerly under the South African Republic; controlled by the British Government acting through a high commissioner of the Union of South Africa. Area, 6704.6 square miles; population at the census of 1921, 112,838, of whom 2235 were Europeans. Capital, Mbabane. The inhabitants are largely of the Zulu type. The chief agricultural products are corn (the staple product), tobacco, millet, various vegetables, peanuts, and cotton. The mineral resources are considered rich, but are undeveloped. The revenue for 1926-27 was £92,090 and the expenditure £111,835. As noted above, the territory is under the administration of the High Commissioner for South Africa, but the local administration is under a resident commissioner.

SWEDEN. A Scandinavian kingdom in the extreme northwestern part of Europe, occupying the eastern and larger part of the Scandinavian Peninsula. Capital, Stockholm.

AREA AND POPULATION. The total area of Sweden is 173,154 square miles; the population, according to the census of 1920, was 5,904,489; estimated, Dec. 31, 1926, 6,074,368. The population per square mile in 1926 was 38.3. The movement of population in the same year was: Births, 102,368; deaths, 71,315; marriages, 38,339; immigrants, 5388; emigrants, 11,043, of whom 9693 migrated to the United States. Cities with more than 100,000 inhabitants at the beginning of 1927 were Stockholm, 453,332; Göteborg, 231,213; and Malmö, 116,827.

EDUCATION. Elementary education is free and compulsory between the ages of 7 and 14. In 1926 there were in the elementary schools, 26,669 teachers and 665,032 pupils. In the same year there were 77 public secondary schools, with 28,564 pupils; 53 people's high schools with 3457 pupils; two high and seven elementary technical schools with about 2800 pupils; military, navigation, agricultural, veterinary, and other special schools; besides institutions for deaf mutes and the blind. There are two universities, Upsala, founded in 1477, and Lund, founded in 1668. The former had 3084 students and the latter 2169 in the fall of 1926.

PRODUCTION. The population of Sweden is almost equally divided between the pursuit of agriculture and commerce and industry. In 1926 there were in Sweden 9,416,000 acres of arable land (9.3 per cent of the total land area),

2,280,000 acres of permanent meadows, and 60,74 acres of forests and pastures. The total value of the crops in 1926 was 1,172,281,000 crowns (\$313,602,000) and in 1927, 1,126,567,000 crown (\$302,032,000), of which the value of hay was 313,851,000 crowns (\$84,143,000); oats, 167,566,000 crowns (\$44,924,000); potatoes, 115,029,000 crowns (\$30,839,000). According to the last livestock census (1920), there were 2,736,000 cattle, 1,011,000 swine, 1,568,000 sheep, 113,000 goats, and 728,000 horses.

From the earliest times, mining has been the chief industry of Sweden, although in recent years wood and wood products have played an important part in the economic life of the country. In 1927 there were produced 9,661,004 tons of iron ore, 413,500 tons of pig iron, 486,900 tons of steel ingots, 398,000 tons of coal, 460,000 tons of cement, 1,558,000 tons of chemical wood pulp (1,450,000 tons for 1926), 61,000 tons of cardboard and paper, 184,358,000 cigars 42,500 tons of margarine, and 20,975 tons of cotton yarn. In 1926, 406,691 persons were engaged in industrial activities, distributed as follows: Mines and metals, 118,970; non-metallic minerals, 41,749; wood and wood manufactures, 57,998; paper and printing, 51,854; foodstuffs, 43,060; textiles and clothing, 53,435; leather and rubber, 18,888; chemicals, 14,391; and electric and gas plants, 6346. The total value of all industrial products in that year was \$1,179,741,000.

COMMERCE. Swedish foreign trade reached record quantity figures during 1927 and was exceeded in value only during the abnormal years 1919 and 1920. Imports and export values, as compared with 1926, increased 6.5 per cent and 14 per cent, respectively. Average import prices, principally by reason of mineral oils and coal, dropped about 10 per cent as compared with 1926, while the reduction in export prices was only about 3.3 per cent. Imports of animal feedstuffs were less than in 1926, while increases were noted in cereals, fruits, textiles, ships, coal and coke, iron and steel, machinery, automobiles, and numerous other items. Practically all exports showed increases, especially animal feedstuffs, hides and skins, lumber, pulp and paper, ships, iron ore, iron and steel manufactures, and machinery. The most marked change geographically was the increase of exports to Germany, which advanced almost 50 per cent, largely because of unusually heavy shipments of iron ore. Swedish imports from the United States were substantially the same as in 1926, while exports to the United States increased slightly over the previous year. The total value of exports in 1927 was 1,616,583,000 crowns (\$433,406,000); of imports, 1,584,364,000 crowns (\$424,768,000). On the basis of the returns for the first half of 1928 it appeared that there would be a marked increase in Swedish imports during the entire year and a more or less sharp decrease in exports, the latter being due to industrial troubles in the metal and wood industries.

FINANCE. The approved budget for the fiscal year 1928-29, which was passed by the Swedish Parliament on June 6, balanced at 744,746,400 crowns. This was an increase of 10,663,700 crowns over the estimated budget and 34,019,200 crowns over the budget for the fiscal year 1927-28. Of the increase in the voted budget, 9,000,000 crowns came under "Expenditure for

increase of capital," and 1,600,000 crowns under "Current expenditures." On the revenue side there was a decrease of 8,500,000 crowns in dividends accruing to the State from shares in the mining company, and income from taxes has been augmented by 10,250,000 crowns. Furthermore, "Loans" were increased about 8,600,000 crowns, as compared with the 1927-28 budget. The Swedish national debt on Dec. 31, 1927, was 1,816,000,000 crowns, of which 1,797,000,000 crowns represented funded debt and 19,000,000 floating debt.

COMMUNICATIONS. The length of railway line at the end of 1927 was 10,110 miles, of which 3877 miles were State owned and 6233 miles were owned by private companies. The mileage of the Swedish State Railways showed a small increase of 120 kilometers at the end of 1927, bringing the total mileage up to 6153 kilometers, as compared with 6033 at the end of 1926. Earnings and expenses of the State Railways during 1927 were as follows: Gross earnings, \$52,310,000; total expenditures, \$42,639,000; net earnings, \$9,671,000; income from passenger traffic, \$16,989,000; income from freight traffic (exclusive of iron ore), \$26,455,000; freight earnings on iron ore, \$5,468,000. The number of passengers carried increased from 27,915,000 in 1926 to 28,298,000 in 1927, and the quantity of goods transported (exclusive of iron ore) expanded from 9,972,000 metric tons to 10,054,000 metric tons. The quantity of iron ore carried in 1927 aggregated 7,456,000 metric tons, as compared with 6,389,000 tons in 1926.

The number of tourists in Sweden in 1928 was considerably above the 1927 total, and it was estimated that the total revenue obtained from this source in 1928 would exceed appreciably the 1927 total of about 30,000,000 crowns (\$8,043,000). The estimated income from tourist expenditures in 1927 approximated 2 per cent of the total value of the exports of merchandise from Sweden during that year. Only 9 of the 25 leading groups in that export schedule reached a higher total than tourist expenditures.

During 1927, 29,791 vessels of 16,253,000 net tons entered the ports of Sweden and 29,772 of 16,235,000 net tons cleared. The Swedish merchant marine in the same year consisted of 1371 vessels of 1,365,390 tons. The total income of the Swedish merchant marine during 1927 amounted to 294,603,000 crowns, as against 278,188,000 in 1926, an increase of about 6 per cent.

GOVERNMENT. Executive power is vested in the King, who acts through a responsible ministry known as the Council of State, at the head of which is the Minister of State, or Premier; legislative power is in the Diet of two chambers, of which the Upper has 150 members elected by the legislatures of the provinces; the Lower Chamber consists of 230 members elected for four years by universal suffrage. The King in 1928 was Gustaf V, born June 16, 1858, who ascended to the throne on the death of his father, Oscar II, Dec. 8, 1927. The ministry was constituted as follows: Premier, Carl Ekman; Foreign Affairs, Eliel Löfgren; Justice, Johan Thyren; Defense, Gustav Rosen; Social Affairs, Jakob Pettersson; Communications, Carl Meurling; Finance, Ernst Lyberg; Education and Ecclesiastical Affairs, John Almkvist; Agriculture, Bo von Stockenström; Commerce, Felix Hamrin; Ministers without Portfolio, Sigurd Ribbing and Natanael Gärde.

HISTORY. Sweden was troubled throughout the year by a series of strikes in the wood-pulp and mining industries, which had a tendency to slow up production and trade during the entire year. The Government made several attempts to mediate but met with little success, particularly after the employers had adopted the lockout system to bring the workers to terms. The industrial unrest was particularly important in light of the elections to be held during the year, when a gain in a few more seats by the Socialists would enable them to get control of the Government and unseat the Moderates who controlled the legislature. However, when the elections were held in September, the returns indicated a loss of 16 seats for the Social Democrats, and gains by the Conservatives, Agrarians, and Communists. Although Premier Carl G. Ekman was reelected, his Minister of Foreign Affairs, J. E. Löfgren, was defeated, and the entire cabinet tendered its resignation as a result. A new government was formed under the premiership of Admiral A. Lindman. It had a decided conservative trend and consisted of a coalition of all the parties in the legislature with the exception of the Social Democrats and the Communists. See **ARBITRATION, INTERNATIONAL**.

SWEDENBORGIANS. See **NEW JERUSALEM, CHURCH OF THE**.

SWEDISH LITERATURE. See **SCANDINAVIAN LITERATURE**.

SWIMMING. Swimming had the greatest year in 1928 in the history of this sport, with the Olympic Games (q.v.) affording a fitting climax. Forty nations participated in the Olympics, the entries of the United States making practically a clean sweep in the various events. The Amateur Athletic Union competitions were marked by more than a hundred record-breaking performances, although a considerable percentage of these missed official recognition because of technicalities and other causes.

Miss Martha Norelius, of the Women's Swimming Association of New York City, led the way in establishing new time standards. Every international record in free-style swimming from 220 yards to 880 yards was bettered by Miss Norelius in the course of her long campaign. Miss Eleanor Garratti, of San Rafael, Calif., set a new world record of 1:10 $\frac{1}{2}$ minutes for the 100 meters in a 55-yard pool. John Weissmuller, of the Illinois A. C., lowered the world time for the 100 meters to 57 $\frac{1}{2}$ in a 110-yard pool. In back-stroke swimming, George Kojac, of New York, set a world 100-meter mark of 1:09 $\frac{3}{4}$ minutes in a 50-meter pool. Miss Lisa Lindstrom, of the Women's Swimming Association, and Miss Eleanor Holm, 14 years old, stood out among the women back-stroke swimmers.

Clarence Crabbe of Honolulu, and Miss Josephine McKim, of Homestead, Pa., distinguished themselves in mile tests. Edward Lee, of the New York A. C., and Miss Ethel McGary, of the Women's Swimming Association, captured the national long-distance championships. Among the American colleges, Yale and Michigan produced the strongest swimming teams, the former winning the dual meet with the Conference college by a "touch." In relay competition, Yale quartet lowered the free-style time for 400 yards at 3:39 $\frac{1}{2}$.

The winners in the United States senior outdoor championships for men were: 220 yards, back stroke, George Kojac, Boys' Club, New York,

2 minutes, 37½ seconds; 440 yards, free style, John Wiessmuller, Illinois A. C., 4 minutes, 58½ seconds; 880 yards, free style, Clarence Crabbe, Honolulu, 10 minutes, 29½ seconds; one mile, Clarence Crabbe, 21 minutes, 35½ seconds; 10-foot spring-board diving, Mickey Reilly, Los Angeles A. C.; plain and fancy high diving, Mickey Reilly; long distance, Edward Lee, New York A. C.

In the senior women's outdoor championships, the victors were: 440 yards, Martha Norelius, Women's Swimming Association, 5 minutes, 49½ seconds; 880 yards, Martha Norelius, 11 minutes, 56½ seconds; one mile, Josephine McKim, Homestead, Pa., 24 minutes, 49½ seconds.

SWINE. See **LIVESTOCK.**

SWITZERLAND. A federated republic of western Europe, comprising within its limits the ranges and peaks of the Alps and Jura Mountains. Capital, Berne.

AREA AND POPULATION. The area of Switzerland is 15,940 square miles; population, according to the census of 1920, 3,880,320; estimated Dec. 1, 1926, 3,959,000. In 1926 the estimated population of the principal cities was as follows: Zurich, 210,720; Basle, 139,560; Geneva, 126,000; Berne, 107,960. The movement of population in 1926 was: Births, 73,963; deaths, 48,297; marriages, 28,079; emigrants, 4947. Linguistic differences constitute the most important distinction among the various Swiss types. German is the language of 70.9 per cent of the people, French of 21.2 per cent, Italian of 6.2 per cent, and Romansch of 1.1 per cent. Dialects of the various languages spoken in Switzerland are numerous.

EDUCATION. According to the school statistics for 1925-26, there were 4407 primary schools, with 17,128 teachers and 491,289 pupils; 599 secondary schools, with 25,369 boys and 24,413 girls and 1776 men and 536 women teachers; 111 lower middle schools with 9446 boys and 5348 girls; and 693 men and 68 women teachers. For special education there were various commercial, technical, agricultural, and other schools. The seven universities of Switzerland, at Basle, Zurich, Berne, Geneva, Lausanne, Fribourg, and Neuchatel, are organized on the model of those of Germany, governed by a rector and a senate, and divided into four faculties of theology, jurisprudence, philosophy, and medicine. In 1926-27 the total number of students in attendance at these universities was 6526 and the members of the various teaching staffs numbered 977.

PRODUCTION. In 1926 there were in Switzerland 1,250,000 acres of arable land, or about 12 per cent of the total area; 4,141,000 acres of permanent meadow and pasture, 36,000 acres of trees, shrubs, and bushes, 2,225,000 acres of forests, 247,000 acres of uncultivated land, and 2,301,000 acres of unproductive land. In the same year there were 1,587,000 cattle, 635,000 swine, 169,000 sheep, 287,000 goats, and 139,000 horses. Dairying is the most important branch of agriculture. In 1927 the acreage and production of the principal crops were as follows: Wheat, 174,000 acres, 5,982,000 bushels; rye, 49,000 acres, 1,657,000 bushels; barley, 16,000 acres, 583,000 bushels; oats, 51,000 acres, 3,059,000 bushels; potatoes, 119,000 acres, 24,618,000 bushels; grapevines, 37,000 acres, 9,246,000 gallons of wine. The production of cheese in 1926 was 70,700 tons; of butter, 13,500 tons.

The principal manufactured products, with the percentage of exports to total production, are as follows: Watches and watch movements, 92 per cent; silk fabrics, 95 per cent; embroideries, 94 per cent; cotton yarn and fabrics, 60 per cent; dyes, 90 per cent; chocolate, 40 per cent; cheese, 67 per cent. The number of factories in operation in 1927 was 8163 as compared with 8123 in 1926.

COMMERCE. As an evidence of the extent to which Swiss products are more than holding their own in foreign markets, in 1927 their exports reached a value of 2,023,249,000 francs, or about 10 per cent more than in 1926, while imports valued at 2,563,794,000 francs, increased about 6 per cent. The unfavorable visible trade balance, to be made up by services, was 540,545,000 francs, or 38,000,000 less than the unfavorable balance of 1926. The charges for services have also increased, so that a much larger sum in the total balance of payments was left available for investment abroad. Only one category of imports—that of animals—fell greatly behind the 1926 figures, and this was the result of restrictive measures imposed by the Government. On the other hand, there were 19 articles whose import value were considerably above those of 1926, not because of higher prices but because larger amounts were brought in. Among exports, no item fell much below the 1926 values; instead, there was a very general increase, showing that some of the heavier imports of raw material were reexported in the form of finished goods. Germany provided 21 per cent of Swiss imports in 1927 and purchased almost 20 per cent of the exports. France was also a heavy supplier, followed by Italy, the United States, and Great Britain. Great Britain was second as a market for Swiss merchandise, followed by the United States, France, and Italy. Imports from the United States were valued at 22,000,000 francs, and exports to the United States at 209,600,000. Total exports in the calendar year 1928 were valued at 2,134,000,000 francs; imports 2,744,000,000 francs.

FINANCE. In estimating receipts and expenditures for 1928, Switzerland budgeted for another deficit, a situation which had occurred annually since 1913. Revenue for 1928 was estimated at 322,230,000 francs and expenditures at 331,550,000 francs. It was not the actual total of receipts and expenditures that disturbs the fiscal authorities so much as the fact that there was always a deficit, although resources are more and more heavily drawn upon each year and an effort is made to cut down normal running expenses. Any saving in this direction is at once offset, and even exceeded by the mounting total of expenditures resulting from beneficiary and paternalistic legislation.

Subsidies for sick insurance have increased from 3,999,000 francs in 1919 to a sum estimated at 7,060,000 francs in 1928, while over the same period accident insurance expenditures increased from 4,344,000 francs to about 6,300,000 francs, and expenditures for unemployment relief and insurance rose from 509,000 francs to an amount estimated at 2,500,000 francs. Old-age pensions, etc., and the fund for government employees had risen to 19,000,000 francs and 19,764,000 francs, respectively. In 10 years the outlays for these services had increased from 8,852,000 francs to 54,624,000 francs. None of the subsidies existed in 1913. An inevitable result of the continuing

deficits in the annual accounts was a slower rate of decrease in the national debt. At the end of 1926 the total debt was 4,832,279,000 francs, compared with 4,855,288,000 francs at the end of 1925. By the end of 1927 the total debt had exceeded that of 1926 and reached a total of 4,900,633,000 francs.

COMMUNICATIONS. The financial situation of the Federal Railways, which had been unsatisfactory since the War, was gradually improving. Receipts during 1927 were the largest yet attained, although expenditures were practically the same as in 1926. (See *YEAR BOOK* for 1927.) However, with the heavy charges incurred as a result of the electrification and other improvements, it was expected that the 1927 accounts might still show an unfavorable balance. The Federal Railways during 1927 operated 1828 miles of line, carried 111,025,000 passengers and 17,813,000 metric tons of freight, and had gross receipts of 395,525,000 francs (\$76,178,000). About 37 per cent of the system was electrified. The private railways have considerable mileage but much less traffic than those of the Government.

GOVERNMENT. Both executive and legislative power are vested in the Parliament of two chambers, the Council of State and the National Council, the first having 44 members elected by the cantons, two for each canton; the second has 198 members elected directly by the people. The two chambers united form the Federal Assembly, which is the supreme organ of government and delegates the chief executive authority to the Federal Council, whose seven members are elected for three years. The seven members of the Federal Council act as ministers for the departments of the Government. The chief magistrates are the President of the Confederation and the Vice President of the Council, and are elected by the Federal Assembly for one year. President in 1928, Edmund Schulthess; Vice President of the Council, Dr. Robert Haab.

HISTORY. The President of Switzerland for 1928 was elected on Dec. 31, 1927. The successful candidate was Edmund Schulthess, who had served in the capacity of chief magistrate in 1917 and in 1921. As a result of the general election held on October 28, the makeup of the legislature was left virtually unchanged. The Radical Democrats lost one seat and the Socialists gained one. The largest gain in the popular vote was made by the Socialists.

SYDNEY, AUSTRALIA, BRIDGE AT. See *BRIDGES*.

SYMPHONY CONCERTS. See *MUSIC*.

SYPHILIS. Dr. P. A. O'Leary of the Mayo Foundation reported in the *Journal of the American Medical Association* for Aug. 25, 1928, the results obtained from treating neurosyphilis with malarial inoculation. This plan of treatment goes back to 1924. The total number treated up to 1928 was 358, and of this number 220 showed the early manifestations of paresis, which leaves 138 so-called non-paretic cases. Of the first group, the author states that the so-called fever (malaria) treatment is superior to any other for bringing the disease to an arrest. The use of typhoid vaccine was not attended by such good results, but was much better adapted to practical requirements. Of the large non-paretic group, many cases of which were without symptoms and recognized only by serological tests, the author stated that he would first make use of the usual

drug remedies, but that if there was no satisfactory response he would at once make use of the fever treatment lest symptoms of paresis supervene. In general, the method was first the drugs arsphenamine, bismuth, and tryparsamide, and in reserve malarial inoculation and typhoid vaccine. Each of these resources may be said to have a definite province. In discussion, Dr. Stone (Cleveland) expressed his belief that the malarial treatment had made good wherever tested. Dr. O'Leary added that he believed we should prevent paresis as well as treat it with the fever therapy. See also *VENEREAL DISEASES*.

SYRACUSE UNIVERSITY. A non-sectarian institution for men and women at Syracuse, N. Y., founded in 1870. The 1928 autumn enrollment was 5430; the extension school enrollment was 2320; and the summer-session enrollment 1679. The faculty numbered about 590 for the year 1927-28. The productive funds of the university amounted to \$3,539,985, and the income for the year to \$1,824,953. The library contained 173,000 volumes and over 60,000 pamphlets. Continuing the programme of reorganization inaugurated in 1927, which resulted in changes in the law school and library school in that year, the reorganization of the college of home economics was completed in 1928; Dr. Annie Louise Macleod, formerly of Vassar College, was appointed as dean of the college, and associates were appointed from Cornell and Yale universities. In 1928 a teachers' pension system for all grades was adopted. Chancellor, Wesley Flint, D.D., LL.D., Paed.D.

SYRIA. Traditionally, the region lying between the Syrian Desert and the Euphrates River on the east and the Mediterranean on the west; and between the Taurus Mountains in the north and Egypt on the south; formerly a province of the Turkish Empire; in 1920 recognized as an independent state under a mandatory power, the mandate being bestowed upon France, Syria, under the mandate, is bounded by the Mediterranean on the west, by Palestine on the south, by Mesopotamia on the east, and by Turkey on the north. Since Jan. 1, 1925, the country comprises four territories: Syria, Alaouite, Great Lebanon, and Jebel Druze. The total area of the mandated region has been placed at 60,000 square miles, and the population in 1926 at 2,046,857. Arabic is the prevailing language. The great majority of the inhabitants being of Arabic stock, and in religion, Sunnite Mohammedan. The chief towns are Damascus, 170,000; Aleppo, 140,000; Beirut, 80,000; Homs, 60,000; Hama, 35,000. There were in 1927, 552 public elementary schools with 38,873 pupils. Various educational schools are maintained by the Greek Catholics, the Maronites, the British missionary societies, and Roman Catholic agencies. There is an American university at Beirut.

PRODUCTION. The year 1927 in Syria was one of general recovery from the depression of 1926. Foreign trade showed a marked expansion, agricultural returns were fairly satisfactory, and industries were active. Exchange improved and larger budget expenditures were anticipated for productive purposes. Preliminary data for 1927 indicated that the harvests were generally equal to those of 1926, though certain cereals, especially wheat, were reported to have fared less favorably than other crops. The fruit crops were better than in 1926, and the production of coconuts was estimated at 3200 metric tons as com-

pared with 3160 tons in the previous year. Reports of agricultural returns from the Damascus district were more favorable than from the other regions, owing to the more stable conditions in that territory. The planting of mulberry trees, many of which were cut down during the World War, continued at a satisfactory rate. Leading industries registered a general improvement over 1926, especially textiles in Aleppo and Damascus. The tanning industry also reported a more favorable year. Syria is primarily an agricultural country, but increased demand for the products of these small establishments is a favorable indication of the gradual return of the country to more stable conditions, following the unsettled period of 1925 and 1926.

COMMERCE. Foreign trade during 1927 showed a marked expansion over the previous year, but with a slightly larger adverse balance. Imports amounted to \$50,300,000, as compared with \$41,055,000 in 1926, an increase of 22.5 per cent; exports totaled \$21,486,000 against \$17,652,000, or 21.7 per cent increase. The increase in imports was accounted for principally by larger purchases of cotton and cotton goods, livestock, industrial oils, and metal manufactures. Increased shipments of cereals and olive oil were chiefly responsible for the better showing in exports. France displaced Palestine as the leading country of destination for exports and reexports, taking 15.8 per cent (14.7 in 1926) of the total; the United States was next, with 13.5 per cent (12.8); Palestine, with 13.3 per cent (16.7); and Egypt with 11.5 (15.3). France was again the chief source of imports, furnishing 15 per cent (19.9 in 1926) of the total; followed by England with 13.9 (13.6); Turkey with 9.6 (9.5); Italy with 9.4 (11); and the United States with 6.8 (7.3).

FINANCE. The budget for 1927 showed a balance of receipts and expenditures of 1,508,630 Syrian-Lebanese gold pounds (1 gold pound equals 20 gold francs); the total for the States under the mandate amounted to 2,775,790 Syrian gold pounds. For 1928 the budget of Syria was balanced at 2,343,608 Syrian gold pounds, the total for the mandated territory being 3,881,898 Syrian gold pounds. The increase over 1927 is accounted for by expenditures from special funds for productive purposes, especially along agricultural lines.

COMMUNICATION. Shipping statistics for 1927 showed a slight increase in tonnage over 1926. There visited Syrian ports in 1927 a total of 820 steam, and 2283 sailing, vessels of 1,830,363 aggregate tons as against 817 steam, and 2343 sailing, vessels of 1,768,744 aggregate tons in the previous year. There are about 500 miles of railways in the country.

GOVERNMENT. Syria is governed under a mandate of France granted by the League of Nations. High Commissioner in 1928, Henri Ponsot.

HISTORY. The outstanding event in Syrian history during the year was the attempt to draw up a constitution which would meet the needs of the natives and at the same time be satisfactory to the French Government. Provisions were made by High Commissioner Ponsot early in the year for holding an election for a Constituent Assembly which would draw up the new constitution. The Assembly met early in June and began its labors. The French High Commissioner in addressing the gathering stated that as soon as its work was done, France would sign a

treaty with the Syrian Government which would be to the mutual advantage of the two parties concerned. When some of the preliminary work on the constitution was completed, it was so unsatisfactory to the French High Commissioner that, he suspended the meetings of the body for a period of three months (August 12). He declared that the constitution which was being drawn up was merely a declaration of independence and was not at all in accord with the relationship of France and Syria under the terms of mandate given out by the League of Nations. When the three months' period was up, the High Commissioner suspended further meetings for another period of three months and thus the year closed without anything concrete being done to establish a native government in the country. It appeared that French imperialism and Syrian nationalism would simply not mix and that the turmoil of the last few years would continue.

TACNA-ARICA DISPUTE. See **ARBITRATION, INTERNATIONAL**; **CHILE**, under *History*.

TAHITI. See **OCEANIA, FRENCH ESTABLISHMENTS IN**.

TAIWAN, t'wän'. Official Japanese name for Formosa. See **FORMOSA**.

TALBOT, THE RIGHT REV. ETHELBERT. American clergyman, former presiding bishop of the Protestant Episcopal Church, died at Tuckahoe, N. Y., February 27. He was born at Fayette, Mo., Oct. 9, 1848, and was graduated from Dartmouth College in 1870 and from the General Theological Seminary, New York, in 1873. Shortly after his ordination as deacon, he was at the Church of the Transfiguration, New York, and then returned to his birthplace as rector of St. Mary's Church there. In a few months he went to Macon, Mo., as rector of St. James's Church and of St. James Military Academy, 1873-87. In the latter year he was consecrated as first Missionary Bishop of Wyoming and Idaho, and entrusted with the task of building up his church in a vast and undeveloped territory. It was the beginning of a work that lasted eleven years and brought fame to Dr. Talbot as a zealous pioneer-churchman and a man of deep human sympathy. He was one of the best-known men in the West. Owen Wister, novelist, used Bishop Talbot as the original of his character of the bishop in his widely read novel, *The Virginian*. During his service in Wyoming and Idaho, the missionary bishop supervised the building of about forty churches and helped to found a hospital at Wallace, Idaho, a cathedral at Laramie, Wyo., a girls' school at Boise, Idaho, and a boys' school at Laramie.

In 1898 Bishop Talbot was elected Bishop of Central Pennsylvania. In 1905 his diocese was divided, and he remained as Bishop of Bethlehem, Pa. On Feb. 15, 1924, he became, by succession, presiding bishop of the Protestant Episcopal Church. He was the last to occupy this office by succession, the Church having decided to choose the subsequent presiding bishops by election. He presided *ex officio* at the trial of Bishop William M. Brown, unfrocked for heresy in 1925. Bishop Talbot resigned from his bishopric Oct. 1, 1927. He won fame as a pulpit orator, and on visits to England preached in Westminster Abbey and St. Paul's Cathedral, London. Bishop Talbot received the degree of S.T.D. from the General Theological Seminary in 1887, that of LL.D. from the University of Missouri in the same year,

and that of D.D. from Dartmouth in 1888. His life in the West is described in *My People of the Plains* and in his other writings. They include *A Bishop Among His Flock*; *A Bishop's Message* and *Tim—An Autobiography of a Dog*.

TALBOT, HOWARD (real name, MUNKITTRICK). An English operatic composer, died in London, September 12. He was born in Yonkers, N. Y., Mar. 9, 1865, but taken, at the age of four, by his parents to London, where he later studied at the Royal College of Music under Sir Hubert Parry and Sir Frederick Bridge. From 1900 on he was conductor at various London theatres. Altogether he wrote some two dozen operettas, many of which enjoyed immense popularity in London. His outstanding successes are *A Chinese Honey-moon* (1899), *Three Little Maids* (1902), *The White Chrysanthemum* (1905), *The Belle of Brittany* (1908), and *The Arcadians* (1909).

TALC. In 1927 the United States Bureau of Mines reported a total production of talc amounting to 192,316 short tons valued at \$2,234,724. The greater part of this production was ground talc amounting to 185,116 tons valued at \$2,097,709. In addition, crude talc amounting to 5706 tons valued at \$25,365, and sawed and manufactured talc amounting to 1494 tons, valued at \$111,650 were included in the total. In 1927 there were imported 25,194 tons of talc, valued at \$550,382 of which 377 tons valued at \$27,326 were crude and unground steatite and French chalk; while 24,817 tons valued at \$523,056 were manufactures of talc (except toilet preparations wholly or partially finished). In 1928 the American short-fibre talc industry had a production slightly in excess of that for 1927 and new properties were being acquired and developed to compensate for mines which had been more or less depleted. Talc was being used as an ingredient of concrete mixture and as a core wash in casting operations. It was being employed experimentally to kill insect larvæ and was also used on the West coast of the United States in the manufacture of tile. Other uses were found in the roofing, paint, and rubber industries. Imports of talcum steatite and French chalk in 1928 amounted to 54,015,895 pounds, valued at \$576,454. In 1928 there were exported from the United States "talcum and other toilet powders" to the amount of 3,136,838 pounds, valued at \$1,605,630, being a slight decrease in quantity and value from the exports of 1927.

TANGANYIKA (tân'gân-yē'ká) **TERRITORY**. A territory under British mandate, comprising the portion of German East Africa assigned to Great Britain after the conquest of the country by British and Belgian soldiers during the World War. Area, about 373,500 square miles; native population (mainly of mixed Bantu race), according to the census of 1921, 4,107,000. The Europeans numbered 2447; Asiatics, 14,991, of whom about two-thirds were Indians. Capital, Dar-es-Salaam, with a population of 25,000. The capital and Tanga are the chief seaports. In 1926 there were 84 government schools, 2345 Roman Catholic schools, and 1254 Protestant schools, with a total roll exceeding 167,883 pupils.

The forest resources of Tanganyika in 1927 were given at a total of 2,713,700 acres. Of this figure, 2,564,700 acres were reserved forest, 114,000 unreserved, and 35,000 acres privately owned. These figures do not include, however, vast tracts of three savannas on public lands containing

much valuable but scattered timber. The chief agricultural products are cereals, manioc, peas and beans, groundnuts, oil products, sweet potatoes and other vegetables, fruits (chiefly bananas), and coffee. Sisal and cotton production are also important industries. The output of cotton in the 1926-27 season was estimated at 10,000,000 pounds. The principal minerals found are coal, gold, mica, graphite, iron and copper ores, cobalt, and nickel. The imports in 1926 were valued at £3,152,422; exports, £3,129,292; transit, £1,423,045. The principal imports consisted of cotton piece goods, foodstuffs, building materials, iron and steel manufactures, machinery, gasoline and kerosene, cigarettes, and liquors. The principal exports were sisal, cotton, groundnuts, coffee, hides and skins, copra, grain, simsim, beeswax, ghee, and chilies. The revenues in 1926 were £1,975,400 and the expenditures £2,233,625. In 1926, 380 steamers (exclusive of coastal boats) of 1,573,914 tons, and 4582 dhows of 100,333 tons, entered and cleared the various ports from places beyond the territory. There are about 1200 miles of railway in the country. In June the London *Times* reported that a new railway was about to be opened from Tabora, on the Central Tanganyika Railway, which connects the Indian Ocean with Lake Tanganyika, to Mwaza, at the south end of Lake Victoria. The line, which is 238 miles long, was 3 years under construction and cost over £800,000 to build.

The head of the administration is a governor, who is aided by a nominated executive council. Since Oct. 1, 1926, there has been a legislative council consisting of 13 official members and not more than 10 non-official members. Governor and Commander-in-Chief in 1928, Sir D. C. Cameron.

TARIFF AND AGRICULTURE. See AGRICULTURE.

TASMANIA. A state of the Australian Commonwealth, consisting of the island of that name and several small islands. Area, including the island of Macquarie (170 square miles), 26,215 square miles; population, according to the census of 1921, 213,780; estimated on June 30, 1927, 210,529. The movement of population in 1926 was: Births, 4988; deaths, 1912; marriages, 1435. Capital, Hobart, with a population including suburbs (Mar. 31, 1927), 52,100. The population of Launceston, including suburbs, on the same date was 27,000.

The agricultural produce in 1925-26 was: Wheat, 395,603 bushels; oats, 835,473 bushels; peas, 258,763 bushels; potatoes, 67,341 tons; hay, 114,920 tons; fruits, 4,664,109 bushels; and hops, 1,743,183 pounds. The value of agricultural and pastoral products was £4,274,000, mining products, £1,475,000, and of manufactures, £3,378,000. The chief minerals in order of value were copper, tin, lead, silver, zinc, coal, gold, and osmiridium. The two chief sources of exports are fruit preserving and metal extraction. The total imports in 1925-26 were valued at £8,450,793; exports, £8,710,855. The principal exports are wool, minerals, timber, fruit, grain, potatoes, hops, bark, and hides and skins. The total registered shipping amounted to 183 vessels of 13,776 tons. On June 30, 1926, Tasmania had 673 miles of railway that were opened to traffic.

The administration is under a governor, who acts through a responsible ministry, and the legislative power is vested in a parliament of

two houses, the Legislative Council of 18 members, elected on the basis of property qualification, and the House of Assembly of 30 members, elected for three years by universal suffrage, including women, and with proportional representation. Governor in 1928, Sir James O'Grady; Prime Minister, Treasurer, and Minister for Mines, J. A. Lyons.

TAXATION. The year 1928 was not a period of great change in taxation either from the Federal standpoint or from that of the individual State. Early in the year a revision of the Federal Income Tax Law was adopted, whose principal features included a readjustment of some of the income tax brackets relating to individual incomes, a minor change in the corporation tax, and some readjustments in internal revenue duty. These have been fully stated elsewhere in this volume under the head of PUBLIC FINANCE. Only nine States held regular sessions of their legislatures, these being New Jersey, New York, South Carolina, Rhode Island, and Massachusetts; those being in biennial session were four in number, Kentucky, Louisiana, Mississippi, and Virginia. Special sessions were held by Illinois, Nevada, Wisconsin, Kansas, and Iowa, while a special session began in California late in the year. Actual changes in State legislation were numerous, but they included no serious changes of principle, while no progress whatever was made toward the establishment of a closer relationship between State and Federal systems that had been under consideration.

Although the League of Nations continued its investigations into double taxation and suggested to various nations methods of cooperation with a view to reducing or eliminating the evil, no material progress in that direction has been accomplished.

STATE INCOME TAXES. In a few States some changes of interest affecting income taxation were made, among them the following: New York State provided that the exemption of \$3500 cannot be claimed for the whole year, if a taxpayer changes his or her marital status during the year. In the latter case, there must be a pro-rating of the tax according to the period of duration of the two conditions. An increase of the minimum income which must be reported has been provided in Wisconsin, the change being from \$700 to \$800 for single persons, and from \$1500 to \$1600 for married persons. Wisconsin also provided a new method for determining net incomes for 1928.

STATE INHERITANCE TAXES. Reciprocity was provided with reference to the taxation of the intangible personality of non-resident decedents by a law of Mar. 12, 1928, retroactive to July 1, 1925, and this provision was accepted by all the States which already had reciprocity of tax treatment with New York except Ohio, Pennsylvania, and Maryland. Reciprocity in taxes was also provided by Mississippi under a law of April 22, while deductions from gross estate were raised from \$25,000 to \$100,000 and adjustments have been made to the Federal Law. Reciprocity of inheritance tax relations has also been established with 14 States and with the District of Columbia by the Province of Ontario. New inheritance tax legislation under which the intangible personality of non-residents would not be taxed after Jan. 1, 1928, was adopted by Virginia. New York made the estate tax applicable to those of \$200,000 instead of only to those of \$1,000,000.

STATE CONSTITUTIONAL AMENDMENTS. State constitutional amendments were of little importance in the field of taxation during 1928, although a general amendment designed to change taxes of corporations was drafted and placed before the California legislature which up to the end of the year had not adopted it. However, considerable work was done by the courts in connection with the constitutionality of taxation. The Appellate Division of the New York Supreme Court held unconstitutional the license tax on foreign corporations issuing no-par stock and this left the tax in force as $\frac{1}{16}$ of 1 per cent of the actual capital employed within the State. Utah courts held unconstitutional the law requiring foreign corporations to pay an annual tax based on the entire capital stock of the corporation. According to the Attorney-General of the State, this decision applied both to domestic and foreign enterprises. The Montana tax on the privilege of grazing foreign livestock, the Illinois tax on gasoline, the intangible tax in California, and the mortgage registry tax in Kentucky were all likewise held unconstitutional. A few other controversies involving constitutional questions were before the courts in various States but no decisions of importance had been reached, and on some cases the issues were still hanging fire.

SPECIAL TAXES. The State tax sale was abolished in New York, where there are still five counties which had been in the habit of returning to Albany unpaid real property taxes for collection through sales. In New Jersey, fees payable for the redeeming of property under the tax-sale law, had been raised from \$10 to \$12. In Mississippi, cattle were exempted from State and county taxes for five years, and the same was true of hotels of 25 or more rooms built by a corporation before Jan. 21, 1932, which were exempt from county and municipal taxes. Gasoline taxes were revoked by New Jersey, in the case of rural mail carriers up to 1500 gallons. According to a decision of the Supreme Court of the United States, gasoline taxes could not be collected from the United States by a State government. Rhode Island gave veterans of the Philippine Insurrection and of the China Relief Expedition the same exemption privileges as the veterans of past wars. New Hampshire raised the gasoline tax from three cents to four cents a gallon, and Virginia from four and one-half to five cents a gallon, Massachusetts imposed a two-cent per gallon tax. In Illinois, the tax on gasoline was held unconstitutional, and the question of constitutionality of the gasoline tax was brought up in Kansas. The Massachusetts tax on gasoline was to become effective Jan. 1, 1929, to be paid by distributors and the proceeds used as a highway fund. Taxation of motor vehicles in Massachusetts was altered so as to provide for levy as an excise on registered motor vehicles instead of as a local general property tax. These proposed changes were held constitutional by the Massachusetts court. Registration fees were reduced by about 75 per cent. Bank taxation was under extensive discussion in California, but no positive action was taken. In many States the whole matter was held up awaiting action by Congress on Section 5219 Revised Statutes, which had not come to pass. Virginia reduced its bank-stock tax from \$1.10 to \$1.00 on \$100 of actual value. Minor changes were made in New York with regard to the income tax on banks

and trust companies. South Carolina changed its method of administering the admission, soft-drinks and license tax. All bottled soft drinks must bear either a stamp or certain stamp or crown manufactured for the State and furnished by it. The State also furnished admission tickets for places of amusement. South Carolina, moreover, introduced an additional license tax of \$100 per store on all chain stores.

DIRECT TAXES. The only change in the direct tax during the past year has been made in New York State where the rate has been cut from 1 mill to $\frac{1}{2}$ mill.

STATE TAX COMMISSIONS. In 1926 a commission was created in Virginia to make a study of, and to revise and codify, the general tax laws of the State. The report of the commission was filed and established the "tax code of Virginia" which cuts down the volume of tax statutes by about 50 per cent, repealing all obsolete tax laws. Local governments have real estate and tangible personality, while the State has intangible personality as a source of income. Massachusetts continued the special tax commission for another year, and New Jersey created one consisting of eight members for the study of the personal property tax. California also had a tax commission assisted by experts at work, but the close of the year did not find the investigation complete.

TAXES COLLECTED BY STATES

State	1927	1928
Alabama	\$ 10,517,548.70	\$ 8,175,313.47
Arizona	1,856,485.45	1,847,196.23
Arkansas	4,576,686.49	4,108,678.25
California	141,910,944.73	140,975,895.64
Colorado	13,805,428.21	10,684,567.79
Connecticut	35,025,075.54	36,187,174.70
Delaware	16,787,000.50	25,163,258.11
Florida	32,186,173.06	21,068,544.13
Georgia	13,491,894.83	14,816,029.57
Hawaii	5,508,465.81	5,911,845.70
Idaho	1,244,553.82	1,088,064.15
Illinois	213,585,171.12	224,858,133.98
Indiana	36,698,762.18	29,925,806.33
Iowa	11,884,091.58	12,421,494.95
Kansas	21,647,348.31	17,468,057.54
Kentucky	25,676,796.13	23,426,098.90
Louisiana	16,205,168.88	14,519,044.20
Maine	8,627,124.23	8,498,218.89
Maryland, incl. D. C.	50,549,229.16	49,115,314.78
Massachusetts	109,002,869.13	111,287,380.08
Michigan	181,996,054.93	159,476,206.96
Minnesota	29,041,504.72	26,186,901.79
Mississippi	2,840,873.00	2,827,752.69
Missouri	67,285,387.53	63,860,846.82
Montana	2,483,382.73	4,392,109.96
Nebraska	5,779,928.58	5,786,083.72
Nevada	671,634.34	868,443.05
New Hampshire	3,584,593.49	4,051,568.64
New Jersey	101,709,535.38	112,899,314.20
New Mexico	731,177.75	883,892.24
New York	751,804,048.24	759,122,485.03
North Carolina	217,227,608.47	236,642,027.42
North Dakota	777,569.64	756,207.33
Ohio	139,643,893.32	136,670,753.77
Oklahoma	23,634,029.21	17,971,218.18
Oregon	6,327,245.70	5,930,977.88
Pennsylvania	257,222,323.04	232,417,910.96
Rhode Island	13,682,453.78	14,138,073.47
South Carolina	3,686,624.14	4,106,465.66
South Dakota	757,247.65	759,597.05
Tennessee	17,934,000.10	17,751,204.24
Texas	46,246,084.06	44,474,619.16
Utah	3,967,904.96	3,442,547.14
Vermont	2,640,652.57	2,264,728.08
Virginia	84,842,206.72	84,330,236.53
Washington ind. Alaska	13,216,289.41	13,197,925.62
West Virginia	17,916,143.08	14,416,321.70
Wisconsin	48,273,116.07	40,689,071.12
Wyoming	2,603,860.83	1,207,093.40
Philippine Isl. .	365,482.70	397,783.81
Totals	\$2,819,059,678.50	\$2,775,276,956.28

FEDERAL TAX RECEIPTS. Federal Tax receipts during the (fiscal) year 1928 are restated under the head of PUBLIC FINANCE, as a part of general treasury income. See PUBLIC FINANCE. The aggregate total showed decrease in (ordinary) receipts from \$4,023,000,000 in 1927 to \$3,863,000,000 in 1928. Internal revenue collections including income taxes, tobacco, and other miscellaneous excises decreased from \$2,869,000,000 to \$2,792,100,000 or \$75,000,000 below the preceding year, while receipts from customs and miscellaneous sources, including government-owned securities, Panama tolls, etc., were \$1,247,200,000 as compared with \$1,260,000,000 in 1927. Customs receipts fell off markedly, going from \$605,500,000 to \$568,156,000, owing to the larger importation of raw materials, either on a free basis or at low rates.

During the year the Executive Department raised a considerable number of tariff rates under the terms of the flexible tariff sections, but the aggregate was not sufficient to bring about any material alteration in total income that was more favorable to the Government. Corporation income taxes, which had been subject to some changes, tended to vary considerably, while income taxes remained nearly stable except for the increments growing out of the tremendously large profits in the stock market which had resulted in largely increasing the number of individuals paying taxes in the very highest groups. The following table shows the percentage distribution of revenue from income tax, as between corporations and individuals during the past two years as compared with five years earlier.

	Corporation per cent	Individual per cent
1922	47	53
1927	58	42
1928	59	41

While the increased proportion of income taxes returned by corporations reflected the effects of the income tax adjustment for 1926, when the rate was set at 13 per cent for 1925, and 13½ per cent for subsequent years, later figures introduced a new element. This was furnished by the increasing number of enterprises which reported no net revenue for taxation. The percentage of such reports in 1928 was 45 (that is to say, 45 per cent of the total number of corporation tax returns that were handed in). The tendency therefore was toward the increasing of incomes from large earnings made by the greater corporations, while income-tax receipts from the smaller corporations fell off on account of the growth in number which had no taxable income. The total number in the latter class was 10 per cent higher in 1928 than it was in 1922.

On the other hand, the concentration of the individual income tax continued, the returns for 1928 showing that very nearly 98 per cent of individual taxpayers were relieved from income-tax payments under the existing law, as the result of personal credit exemptions. The changes made in the income-tax law of 1928 did not of course show in the returns for that year. General prosperity, despite some falling off of business during the year 1927, accompanied by large stock-market profits must be regarded as the fundamental factors tending to keep up individual income-tax receipts notwithstanding the predictions of decline which had been made by various Treasury officials.

For the calendar year 1926, as reported by the Secretary of the Treasury at the end of 1928, 853,838 individuals with an income of \$5000 or more each, returned \$13,864,000,000, while of these 853,838 individuals, those with incomes from \$5000 to \$50,000 each, returned \$9,528,690,000. The largest number of corporations making tax returns prior to 1925 was 417,421. For 1925, the number reporting was 430,072; for 1926, 455,320; and for 1927, 452,853. In the latter year, corporations to the number of 249,847 returned net income amounting to 8,070,000,000 and paid an income tax amounting to \$1,291,845,989, while the number returning no net income was 203,006.

CHANGES RECOMMENDED TO CONGRESS. No changes of importance were before Congress at the end of 1928 save minor alterations designed to provide for corrections of practice here and there. The changes actually made in the Revenue Act of 1928 have been reviewed elsewhere under the head of **PUBLIC FINANCE**. It was, however, plainly indicated in Government statements, as well as by authoritative addresses, delivered during the campaign of 1928, that the limit of the income-tax reduction by the Federal Government had been approximately reached. Federal taxation and revenue had become finally balanced against expenditure. The prospect of an extended tariff revision indicated by the hearings before the Ways and Means Committee during the autumn and winter of 1928-1929 afforded the most positive assurance of income-tax changes, since general advance in tariff duties would, as matters stood, almost unavoidably involve a corresponding decline of incomes, and this in turn would lead to deficit conditions which could be most easily corrected by making changes either in the corporation or in the individual income taxes.

TAXATION, FARM. See **AGRICULTURE**.

TAXES. See **PUBLIC FINANCE**.

TAYLOR, WILLIAM SYLVESTER. American lawyer and officeholder, died at Indianapolis, Ind., August 2. He was born in Butler County, Kentucky, Oct. 10, 1853. He was the central figure in the case of the shooting of William Goebel, at Frankfort, Ky., Jan. 30, 1900, in the contest between the latter and Taylor for the Governorship of Kentucky, Goebel having been the Democratic candidate and Taylor the Republican. The Democratic vote had been divided in the preceding election and Taylor had been declared elected. A committee of the legislature was prepared to submit a report unseating him in favor of Goebel, on charges of fraud, when the latter was shot. Taylor was accused by his political opponents of planning the crime and was indicted, and to avoid a fate similar to that of Goebel, as was alleged, he fled to Indianapolis, Ind. He spent the rest of his life there, never returning to Kentucky so far as known. He was a self-educated man, and had been admitted to the bar. His gift as a speaker had won for him the offices of Clerk of Butler County, county judge, and Attorney-General of Kentucky, before his campaign for the governorship. After his removal to Indianapolis, he resumed the practice of law and engaged in the insurance business there.

TEACHERS' COLLEGES. See **UNIVERSITIES AND COLLEGES**.

TELEGRAPHY. The remarkable growth of the International Telephone and Telegraph Com-

pany and its absorption, first, of the All-America Cable Company and, second, of the Mackay Cable Company was one of the features of the year. Incidentally, the International Company acquired the control of the principal wire communication systems in Spain, Argentina, and other South American countries. The British were also proceeding in the merging of all their overseas communication systems. The Western Union Company laid a new high-speed cable from Newfoundland to the Azores, connecting there with other cables to Spain, Portugal, Italy, and Germany.

The Western Union made arrangements with the Bell Companies by which telegraph messages may be telephoned from any home or other private station and may be delivered at the other end by telephone, thus providing a house to house telegraph system over the whole country. Another arrangement between these two companies was one in which the telephone company rents to one or another of the telegraph companies its excess channels of communication obtained by duplexing or quadruplexing the physical circuits. This made it possible to send telephone and telegraph messages simultaneously over the same wire and greatly increases facilities without putting up additional wires. The telegraph companies also obtained the right to use the method of sending "facsimile" messages, that is, actual reproductions of letters, documents, photographs, etc.

As a result of the great increase in business on the New York Stock Exchange, the old "ticker" system of sending market quotations all over the country was swamped and was frequently an hour behind the actual sales. The Western Union is now installing a new fast ticker system, which is designed to meet the needs of our much increased financial business.

A new feature of the cable business was the arrangement by which "night cable letters" may be sent at reduced rates, making it possible to send a 50-word letter to Europe at a cost as low as two dollars.

TELEPHONY. Telephone traffic in the United States continued to increase during 1928 and averaged 76,000,000 completed conversations daily, of which more than 3,000,000 a day were toll conversations. At the end of the year the telephone companies in the United States employed more than 390,000 people. There were also more than 50,000 employees in the Western Electric Company (manufacturers of telephone plant and equipment), and in excess of 4000 employees in the Bell Telephone Laboratories where research and experimentation was carried on.

INCREASED LONG-DISTANCE FACILITIES. The construction of land telephone cables in the United States continued during 1928, and it was possible to talk through substantially storm-proof long-distance telephone cable from Maine to North Carolina and as far west as Iowa and Missouri. During the year the projected New York-Atlanta telephone cable was pushed southward from Petersburg, Va., to Greensboro, N. C. New telephone cable was also constructed southward from Toledo to Findlay, Ohio, and additional cables were placed on other existing cable routes. The total land telephone cable construction by the Bell System during 1928 amounted to about 1500 miles of cable. Additional telephone circuits were added during 1928 on the three

transcontinental telephone routes, additional wires being strung from Omaha via Denver and Salt Lake City to Sacramento; along the northern transcontinental route, the Western terminal of which is at Seattle; and also from El Paso, Tex., to Los Angeles along the Southern transcontinental telephone line. The Long Lines Department of the American Telephone and Telegraph Company expended a total of \$47,650,000 for new construction of cable and other long-distance telephone facilities during 1928.

At the end of the year, the Bell System had over 200,000 miles of carrier channel in operation on long-haul routes. A system of carrier telephony was introduced during 1928 which is applicable to shorter lines.

The use of long-distance telephone circuits for connecting chains of radio broadcasting stations, sending out a single programme simultaneously, made further progress during 1928. On one occasion, 106 broadcasting stations were thus linked up by 25,300 miles of telephone wire.

THE TRANSATLANTIC SERVICE. The number of points which could be reached by telephone from the United States was substantially increased in 1923 by successive extensions of the transatlantic telephone service. At the end of the year it was possible to talk from practically any point in the United States, Cuba, Ontario, and Quebec and from certain cities in other parts of Canada and in Mexico to virtually any place in England, Scotland, and Wales, Germany, Switzerland, Belgium, Spain, France, and The Netherlands, as well as to Copenhagen, Stockholm, Gothenburg, Malmö, Oslo, Vienna, Budapest, Prague, and Danzig. One point in Africa—Ceuta, Spanish Morocco—was also made accessible by transatlantic telephone. At the formal opening of telephone service between the United States and Madrid, President Coolidge conversed from Washington with King Alfonso of Spain, at Madrid. Interconnection was possible throughout a network of 27,000,000 telephones serving a population of nearly 330,000,000. The hours of service on the transatlantic circuit were also extended during 1928 and the rates were reduced. On June 1, a short-wave radio telephone circuit was placed in service to supplement the previously existing long-wave facilities and the construction of additional short-wave circuits was undertaken. On February 16, two audiences, one in New York and the other in London, conducted a joint meeting by transatlantic telephone.

Announcement was made during 1928 that the Bell Telephone Laboratories had developed a long-distance deep-sea telephone cable capable of successfully transmitting speech across the Atlantic Ocean.

CONTRACTS WITH TELEGRAPH COMPANIES. Simultaneous transmission of telephone and telegraph messages over the same wires was one of the improvements that would be effected on a nation-wide scale as a result of far-reaching arrangements consummated between the American Telephone and Telegraph Company and two telegraph companies, the Western Union Telegraph Company and the Postal Telegraph and Cable Corporation. A series of non-exclusive contracts entered into with each of the telegraph companies makes provision for furthering the development of electrical communications along lines made possible by the latest devices and methods developed through the work of the Bell system research experts. By these arrangements the users

of electrical communications will receive the benefit of many of the advantages that would follow the consolidation of all electrical communication facilities, but at the same time the telephone and telegraph companies will maintain complete independence of each other. One of the new contracts makes the long distance telephone lines of the American Telephone and Telegraph Company available for the transmission of telegraph messages handled by these two telegraph companies.

Further utilization of telegraph lines will be made possible under another of the contracts which provides that the Western Union Telegraph Company and the Postal Telegraph and Cable Corporation may lease apparatus developed in the Bell Telephone Laboratories, the research organization maintained by the American Telephone and Telegraph Company, by which a single pair of telegraph wires may be made, under certain conditions, to serve as several telegraph channels.

Still another of this series of contracts makes available for the customers of these two telegraph companies the use of the telephone company's telephone system for the transmission of facsimile messages between cities in which stations for the transmission of pictures by wire are maintained by the telephone company. In 1928 telephotograph service was available between New York, Boston, Atlanta, Cleveland, Chicago, St. Louis, San Francisco, and Los Angeles.

RESEARCH. Experiments were carried forward during 1928 by the Bell Telephone Laboratories for the development of radio telephone communication in connection with aviation, and telephone research was also actively prosecuted along many other lines. There has recently been developed in the Bell Telephone Laboratories a new group of magnetic alloys known as "perminvars." These are a series of alloys of nickel, iron, and cobalt which have unusual magnetic properties, making them particularly suitable for various uses in electrical communication, including continuous loading of telephone conductors.

A notable advance was made to wire communication in standardization and utilization of an 1800-pair telephone cable. Heretofore, 1200-pair cables had been in service, but with an increase of 50 per cent in circuit capacity, the new cables would provide many more voice channels in the congested, underground conduit systems of large cities. The vacuum-tube telephone repeater finds a particular application in long-distance telephone cables. Marked developments in these vacuum-tube repeaters came in the lengthening of the service life by several fold and a substantial decrease in consumption of electric power for their operation.

FINANCING. During 1928 the largest piece of telephone financing ever undertaken was successfully carried out through the offer of \$185,863,000 par value of American Telephone and Telegraph Company stock to the stockholders. More than 430,000 stockholders received rights to subscribe and 265,000 subscriptions were sent in covering more than 99½ per cent of the stock.

TELEVISION. See RADIO TELEGRAPHY AND BROADCASTING.

TEMPLE UNIVERSITY. An institution for the higher education of men and women at Philadelphia, Pa., founded in 1884. The 1928 autumn

enrollment was 9958, distributed as follows: Liberal arts and sciences, 1111; teachers' college, 3351; elementary school, 97; commerce, 2740; theology, 60; law, 761; medicine, 223; pharmacy, 348; dentistry, 436; music, 225; chiropody, 51; university high school, 423; training school for nurses, 105; oral hygiene, 27. The summer school registration was 1352. There were 587 members on the faculty. The income for the year totaled \$1,366,690. The library contained 41,606 volumes. President, Charles E. Beury, LL.D.

TENNESSEE. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,337,885. The estimated population on July 1, 1928, was 2,502,000. The capital is Nashville.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Corn	1928	2,915,000	56,842,000	\$56,842,000
	1927	2,944,000	70,656,000	58,644,000
Cotton	1928	1,086,000	420,000 ^a	37,880,000
	1927	965,000	359,000 ^a	34,105,000
Hay	1928	1,360,000	1,840,000 ^b	30,808,000
	1927	1,402,000	1,822,000 ^b	27,114,000
Tobacco	1928	112,400	88,459,000 ^c	19,462,000
	1927	87,800	68,484,000 ^c	14,661,000
Wheat	1928	422,000	3,714,000	5,311,000
	1927	528,000	3,696,000	5,137,000
Potatoes	1928	43,000	4,085,000	3,676,000
	1927	39,000	3,432,000	4,633,000
Sweet potatoes	1928	41,000	3,895,000	3,700,000
	1927	48,000	4,704,000	3,998,000
Oats	1928	188,000	4,042,000	2,425,000
	1927	179,000	3,043,000	1,826,000

^a bales, ^b tons, ^c pounds.

MINERAL PRODUCTION. The highly varied mineral industries of the State are dominated in point of importance by coal mining, which annually furnishes an output of about one-fourth of the entire mineral total of the State. In 1927 coal mining held its own in Tennessee, although labor conditions in this industry were disturbed in other States. There were mined 5,783,367 net tons of coal, as against 5,788,741 in 1926; the value of coal mined was: 1927, \$10,645,000; 1926, \$10,975,000. Cement shipments, next in importance, attained the quantity of 5,053,528 barrels for 1926 and declined to 4,343,337 for 1927; their value was: 1927, \$6,580,732; 1926, \$8,352,095. The clay products of 1926 had a value of \$5,105,827; those of 1925, \$3,941,395. Coke continued to be made in beehive ovens in the State, these producing 122,410 short tons valued at \$506,017 in 1926, but the use of by-product ovens was somewhat on the increase. These produced 122,000 short tons of coke in 1927, as against 118,624 in 1926 valued at \$628,492.

The copper industry of the State was less active in 1927, there being a smelter output of 14,498,951 pounds, as compared with 18,601,586 in 1926. The mine production of copper in 1926, slightly in excess of the smelter output, was valued at \$2,604,933. Pig iron was produced to the quantity of 87,971 long tons in 1927 and 113,029 in 1926; in value, \$1,911,380 for 1927 and \$2,544,825 for 1926. The iron-ore output remained below \$400,000. Phosphate rock production was 455,395 long tons in 1926, 464,240 in 1925; in value, \$1,980,613, for 1926 and \$2,334,995 for 1925. The output of lime was large, the producers' sales being 176,000 short tons (estimated) for 1927 and 173,363 for 1926; in value, \$1,261,000

for 1927 and \$1,319,303 for 1926. The stone output of 1926 was valued at \$4,170,016. After copper, the chief metal in point of total production value was zinc. There were mined in 1926, 12,008 short tons of zinc; in 1925, 16,256. The value of zinc produced was \$1,814,700 for 1926 and \$2,470,912 for 1925. Lead, gold, and silver were obtained in minor amounts. The total value of the State's mineral products was, for 1926, \$39,296,668; for 1925, \$38,869,198.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operations of State governmental departments, \$16,075,340 (of which \$3,883,158 was aid to local education); for interest on debt, \$901,873; for permanent improvements, \$10,963,010; total, \$27,940,223 (of which \$14,136,780 was for highways, \$4,532,159 being for maintenance and \$9,604,621 for construction). Revenue was \$26,534,880. Of this, property and special taxes formed 23.7 per cent; departmental earnings and charges for officials' services, 8.0 per cent; sales of licenses and taxation of gasoline, 43.5 per cent. Property valuation was \$1,720,780,504; State taxation thereon, \$3,441,561. Net State funded debt on June 30, 1927, was \$17,222,176.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 4062.69. There were built in 1928, 1.85 miles of additional second track.

EDUCATION. Among the developments of 1928 in the State educational system, as reported by Commissioner P. L. Harned in the *Journal* of the National Education Association, was the arrangement by which an appropriation of \$1,000,000 by the State, for replacing and repairing country schoolhouses, was to be augmented by one-half through appropriations of the counties, each in accordance with the share of the State total apportioned to it. A normal school of junior college grade was established at Clarksville for the training of country teachers. New buildings were added to the Polytechnic Institute, the Agricultural and Industrial College for Negroes, and three teacher colleges. For the school year 1926-27 the population of school age (6 to 18 years) was given by the State Department of Education as: white, 494,513; colored, 106,894; total, 601,407. There were enrolled in the public schools, according to the same source, a higher total, namely, 649,007, including 117,392 Negroes. The daily attendance, however, was lower, being: white, 371,362; colored, 85,515; total, 456,877. Of the attendance 286,401 was in county elementary schools, 37,029 in county high schools, 121,114, in city elementary schools and 12,333 in city high schools. Teachers' salaries averaged \$799.47 a year, the county elementary teachers' average being \$584.98 and all other teachers' about \$1160. Total expenditure for county schools was \$17,635,069; for city schools, \$11,161,099.

CHARITIES AND CORRECTIONS. Supervision of the institutions of the State is in the hands of a State Department of Institutions under a single commissioner. The institutions include most of the chief types common in the States, but have lacked an institution for the criminal insane, for which Commissioner Pope has sought appropriations. A Welfare Division, created under an act of 1925, has conducted a State-wide inspection of county and local institutions and welfare agencies. The State institutions are: Eastern, Central, and Western State Hospitals (men-

tal); Home for Feeble-Minded Persons; Tennessee School for the Deaf; Tennessee School for the Blind; Tennessee Industrial School; State Training and Agricultural School for Boys; Tennessee Vocational School for Girls; Tennessee Vocational School for Colored Girls; Confederate Soldiers' Home; Brushy Mountain Penitentiary; State Penitentiary.

POLITICAL AND OTHER EVENTS. The joint effort of North Carolina and Tennessee to provide the money for the purchase of lands in the Great Smoky Range to form a National Park was advanced by a gift, announced in March, of \$5,000,000 by the Laura Spelman Rockefeller Memorial to the park fund. There had been raised up to that time or promised, partly by legislative appropriation in the two States and partly by private subscription, nearly \$5,000,000, and consequently the intended total of \$10,000,000 was brought within view by the above-mentioned \$5,000,000 gift.

In the State primary elections of July 31, Governor Horton gained the Democratic nomination for reelection, defeating Hill McAlister by a somewhat narrow margin. Senator Kenneth D. McKellar received the Democratic nomination for Senator to succeed himself.

ELECTION. At the election of November 6, a considerable part of the Democrats cut Alfred E. Smith, the Democratic presidential candidate, thus giving the State to Herbert Hoover, Republican, by a moderate plurality. The presidential vote was: Hoover, 195,388; Smith, 157,343. Other Democrats were generally elected. Kenneth McKellar, Democrat, was reelected to the United States Senate, and the delegation of United States Representatives remained at eight Democrats and two Republicans, all reelected men but one. Governor Henry H. Horton, Democrat, was likewise elected for another term.

OFFICERS. Governor, Henry H. Horton; Treasurer, John F. Nolen; Comptroller, Edgar J. Graham; Secretary of State, Ernest Haston; Auditor, O. S. Shannon; Attorney-General, L. D. Smith; Commissioner of Education, P. L. Harner.

JUDICIARY. Supreme Court: Grafton Green, Chief Justice; Associate Justices, A. W. Chambliss, Colin P. McKinney, W. H. Swiggert, William L. Cook.

TENNESSEE, UNIVERSITY OF. A non-sectarian, coeducational institution of higher education at Knoxville, Tenn., with colleges of medicine and dentistry and a school of pharmacy at Memphis, and a junior college at Martin; founded in 1794. The total enrollment of 4594 students in 1928 was distributed as follows: Summer session, Knoxville, 1423; summer session, Martin, 107; autumn quarter, Knoxville departments, 224; Memphis departments, 710; and junior college, Martin, 130. There were 308 members on the faculty. The land grant amounted to \$400,000 and the income for the year 1927-28 was over \$2,240,000. The library contained 96,173 volumes. President, Harcourt A. Morgan, LL.D.

TENNIS. France, for the second year in succession, ranked first among the nations on the lawn-tennis court. The French players, René Lacoste, Henri Cochet, and Jean Borotra, successfully defended the Davis Cup, emblematic of the world's championship, which they had won in 1927 by defeating the United States team of William T. Tilden, 2d, John Hennessey, and Francis Hunter in the challenge round by four

matches to one. The lone victory gained by the United States went to the credit of Tilden, who had been removed from the Davis Cup team, of which he was captain, just previous to the challenge matches by the U. S. Lawn Tennis Association officials on the ground of having violated the player-writer rule. This action barred Tilden from competing in the intra-zone final between the United States and Italy, which, however, the United States won without him. So intense was the feeling aroused by the banning of Tilden that Myron T. Herrick, United States Ambassador to France, finally intervened and secured Tilden's reinstatement in time for the challenge round. After the Davis Cup competitions, however, Tilden was suspended by the U. S. L. T. A. and his case was to come up before the executive committee of the Association in February, 1929, for final action.

The pre-challenge round of the Davis Cup play, which resulted in narrowing down the challenging field to the United States and Italy were as follows:

European Zone: First Round—Italy defeated Australia, 4 matches to 1; Rumania defeated Belgium, 5 to 0; Germany defeated Greece, 4 to 1; Spain defeated Chile, 3 to 2; Finland defeated Jugo-Slavia, 4 to 1; England defeated Argentina, 4 to 1; Hungary defeated Norway, 5 to 0; Holland defeated Ireland, 5 to 0; Denmark defeated Poland, 5 to 0; Austria defeated the Philippines, 4 to 1.

Second round—India defeated Switzerland, 3 to 2; Italy defeated Rumania, 4 to 1; Germany defeated Spain, 3 to 2; England defeated Finland, 5 to 0; Holland defeated Hungary, 3 to 2; Austria defeated Denmark, 4 to 1; Czechoslovakia defeated Sweden, 4 to 1; New Zealand defeated Portugal, 4 to 1.

Third Round—Italy defeated India, 4 to 1; England defeated Germany, 4 to 1; Holland defeated Austria, 5 to 1; Czechoslovakia defeated New Zealand by default.

Final Round—Italy defeated England, 4 to 1; Czechoslovakia defeated Holland, 3 to 2.

Interzone Final—Italy defeated Czechoslovakia, 3 to 2.

American Zone: First Round—Japan defeated Cuba, 5 to 0; United States defeated Mexico, 5 to 0.

Semi-final Round—Japan defeated Canada, 3 to 1; United States defeated China, 5 to 0.

Final Round—United States defeated Japan, 5 to 0.

Nearly ten thousand spectators were on hand for the challenge round matches between the United States and France which was contested at Auteuil, near Paris, from July 27 to July 30, inclusive. The results of the matches follow:

Singles—Tilden defeated Lacoste, 1-6, 6-4, 6-4, 2-6, 6-3; Cochet defeated Hennessey, 5-7, 9-7, 6-3, 6-0; Cochet defeated Tilden, 9-7, 8-6, 6-4; Lacoste defeated Hennessey, 4-6, 6-1, 7-5, 6-3.

Doubles—Cochet and Borotra defeated Tilden and Hunter, 6-4, 6-8, 7-5, 4-6, 6-2.

The Wightman Cup international team match held at Wimbledon saw the triumph of the English women's team of Miss Eileen Bennett, Mrs. M. Holcroft Watson, Miss Betty Nuthall, Miss L. Harvey, and Miss Peggy Saunders over a United States team comprising Miss Helen Wills, Mrs. Molla Mallory, Miss Helen Jacobs, Miss Eleanor Goss, and Miss Anderson. The English side won by three matches to two, Miss Wills scoring two victories for the United States and Miss Jacobs the other.

Henri Cochet, the sensational French player, captured the United States national singles title by defeating Francis T. Hunter in the final, 4-6, 6-4, 3-6, 7-5, 6-3. René Lacoste, who won the title for France in 1927, did not defend his crown and William T. Tilden, 2d, the leading United States player, watched the play from the press box.

The holders of the various United States championship titles at the close of 1928 were: Singles,

Henri Cochet; doubles, George Lott and John Hennessey; Women's singles, Miss Helen Wills; women's doubles, Miss Wills and Mrs. George Wightman; clay-court singles (not held); indoor singles, William Aydelotte, indoor doubles, Aydelotte and Perrine Rockafellow; intercollegiate singles, Julius Seligson; intercollegiate doubles, Ralph McElvenny and Alan Herrington.

The Wimbledon men's singles were won by René Lacoste and the doubles by Henri Cochet and Jacques Brugnon. Miss Helen Wills, for the second consecutive year, captured the women's singles, the doubles going to Mrs. Holcroft Watson and Miss Peggy Saunders.

TENNYSON, HALLAM, LORD. English author, second son of Alfred, Lord Tennyson, died on the Isle of Wight, December 2. Born at Twickenham, Aug. 11, 1852, he attended Marlborough College, and Trinity College, Cambridge, later studying law at Inner Temple. He then became private secretary for his father, also doing literary work. The best known of his books is *Jack and the Beanstalk*, illustrated by R. Caldecott, and he also contributed to magazines, publishing a translation of *Brunanburh* in the *Contemporary Review*, November, 1876, which his father afterward put into verse. Lord Tennyson wrote *Alfred, Lord Tennyson: A Memoir* (1897), and edited: Charles Tennyson Turner's collected lyrics and sonnets, *Poems by Two Brothers*, *In Memoriam*, the Eversley edition of his father's complete works, with notes by the poet (1908); and *Tennyson and His Friends* (1912). Lord Tennyson served as governor and commander-in-chief of South Australia, 1899-1902, first acting governor-general of the Commonwealth of Australia in 1902, and governor-general of Australia, 1902-04. He was honorary colonel of the South Australian Artillery, and of the Seventh Victorian Light Horse. Being made deputy-governor of the Isle of Wight in 1913, he held that office until his death. Cambridge, and the universities at Melbourne and Adelaide, Australia, conferred on Lord Tennyson the Litt.D. degree, and he received the D.C.L. degree from Oxford. He was created a Knight Commander of St. Michael and St. George in 1899, a Knight of the Grand Cross of St. Michael and St. George, 1903, a privy councillor, 1905, and awarded the Grand Cross of the Japanese Order of the Rising Sun, 1905.

TEREDO. See ZOÖLOGY, under *Mollusca*.

TERRY, DAME ELLEN (ALICE). English actress, died at Small Hythe, near Tenterden, Kent, England, July 21. She was born at Coventry, England, Feb. 27, 1848. She came of a theatrical family, being the daughter and granddaughter of players. Her parents, Benjamin and Sarah Terry, were among the best and best-known provincial actors of England of their time. Her three sisters and three brothers all attained prominence on the boards, as did her two children (Edith and Edward, known as Ailsa and Gordon Craig) and three nieces. Ellen Terry (who dropped the name "Alice" early in life) made her first appearance on the stage at the age of eight, as the boy Mamillius in Charles Kean's revival of *A Winter's Tale*, at the Princess's Theatre in London, in 1856. In the audience were Queen Victoria, the Prince Consort, and a great concourse of the officials and aristocracy of England. Later, Ellen Terry was honored by royalty as the greatest living English-speaking actress. In March, 1863, she made her appearance at the

Haymarket Theatre, London, having played in the meantime a variety of rôles, including Puck in *A Midsummer Night's Dream*. She also took the part of Desdemona in *Othello*. Then came her temporary retirement from the stage in 1864, following her marriage to the painter, G. F. Watts, much her senior in years. The marriage was unhappy and was dissolved, and in two years she was back on the stage. She was later married to Charles Wardell, whose stage name was Kelly, and who died in 1885, and in 1907 to James Carew, also an actor, and the leading man in her company. For six years before 1875 she lived in retirement, and then joined the Bancrofts at the Prince of Wales's Theatre, where she acted the part of Portia. It was in this period that her charm of personality, manner, and voice won widespread recognition. In 1876 she played at the Court with John Hare, in Lord Lytton's *The House of Darnley*, and early in 1878 she won a great success in Wills's *Olivia*, at the same house. At the end of 1878 Miss Terry began her brilliant association of twenty-four years with Henry (later Sir Henry) Irving at the Lyceum, as Ophelia to his Hamlet. She had met Irving ten years earlier, and he had promised her a place as his leading lady when he should have his own theatre and company. She had played with him in *The Taming of the Shrew*. Her most notable rôles during her appearances with Irving were: Portia in *The Merchant of Venice* (1879), probably the most famous of all; Camma in Tennyson's *The Cup* (1881); Juliet in *Romeo and Juliet* (1882); Viola in *Twelfth Night* (1884); Marguerite in *Faust* (1885); Fair Rosamond in Tennyson's *Becket* (1893); Madame Sans Gène in a Sardou adaptation (1897); and Clarissa in *Robespierre* (1899). Miss Terry's leading place among English actresses was undisputed. Her later rôles included: Mistress Page in *The Merry Wives of Windsor* (1902); Alice Grey in Barrie's *Alice-Sit-by-the-Fire* (1905); Lady Cecily Waynflete in Shaw's *Captain Brassbound's Conversion* (1906); Hermione in *A Winter's Tale* (in which she had made her first stage appearance). At various times Miss Terry lectured on Shakespeare's heroines, with impersonations. In 1915, for this purpose, she visited the United States; her first visit to America as an actress was made in 1883, when she received a welcome that was repeated on eight subsequent occasions.

A jubilee performance was held in Ellen Terry's honor at Drury Lane, London, in June, 1906, to celebrate the fiftieth anniversary of her stage début. On this occasion Duse, Réjane, the two Coquelins, and other famous players from the Continent assembled in her honor, and Melba and Caruso sang. In 1916 she made her only appearance in the films, in a picture called *Her Greatest Performance*. Her last regular stage appearance was made in June, 1919, when she played the nurse in *Romeo and Juliet* to the Juliet of Miss Doris Keane, at the Lyric Theatre in London. The last years of her life were passed in retirement on her small estate in Kent, England. Her eightieth birthday, Feb. 27, 1928, was made the occasion of a demonstration of the affection in which she was held by the people of the English-speaking nations.

In 1925 King George of England conferred on Ellen Terry the high distinction of Dame Grand Cross of the Most Excellent Order of the British Empire. The University of St. Au-

draws, Scotland, had bestowed upon her in 1922 the honorary degree of Doctor of Laws.

In 1908 Miss Terry published *Story of My Life*, a volume of memories, and in 1913 *The Russian Ballet*. Many books were published about her and her art. Among them may be mentioned William Winter, *Shadows of the Stage* (1892); Hiatt, *Ellen Terry and Her Impersonations* (1898); Clement Scott, *The Drama of Yesterday and To-day* (1899); *Ellen Terry* (1900); T. E. Pemberton, *Ellen Terry and Her Sisters* (1902). See the article, HENRY IRVING, in THE NEW INTERNATIONAL ENCYCLOPEDIA.

TETANUS. Among the tragedies of medical practice are those cases of lockjaw which develop in clean wounds where all aseptic precautions have been taken, especially when the wounds are slight, trivial, and quick to heal, and where there is absolutely no warrant for giving prophylactic injections of anti-tetanus serum. Cases of this type are by no means rare and at times there is a doubt as to whether they are really due to the tetanus bacillus. In a case where fatal tetanus followed an injection of quinine in a fresh case of malarial fever, the author, Dr. J. E. Bordoy, a military surgeon of Madrid (*Archivos de medicina, cirugía y especialidades*, Nov. 28, 1928), felt obliged to eliminate all possibility of hysteria or simulation, strychnia poisoning, hydrophobia, meningitis, tetany, deep abscess of the throat, vertebral rheumatism, etc.—any of which conditions might (in theory at least)—produce lockjaw—before establishing his diagnosis of tetanus. The fact that an abscess developed eventually in the muscles of the buttocks where the injection had been made robbed this case of some of its mystery, for evidently there had been in some manner contamination from without; especially as the pus later showed signs of decomposition. But cases identical with the preceding have been wholly unaccompanied by any wound infection, giving rise to the belief that the malaria or the quinine had mobilized tetanus organisms already latent in the body and made it possible for these organisms to attack the nervous centres.

TEXAS. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 4,663,228. The estimated population on July 1, 1928, was 5,487,000. The capital is Austin.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Cotton	1928	17,766,000	5,150,000 ^a	\$450,625,000
	1927	16,176,000	4,352,000 ^a	419,968,000
Corn	1928	4,722,000	99,162,000	77,346,000
	1927	5,198,000	119,347,000	77,576,000
Wheat	1928	2,016,000	22,176,000	24,394,000
	1927	1,850,000	17,945,000	21,713,000
Grain sorghum	1928	2,760,000	69,000,000	41,400,000
	1927	2,654,000	55,734,000	36,227,000
Oats	1928	1,402,000	35,751,000	18,233,000
	1927	2,003,000	42,063,000	19,770,000
Hay	1928	856,000	941,000 ^b	11,881,000
	1927	848,000	968,000 ^b	10,853,000
Potatoes	1928	39,000	2,691,000	2,691,000
	1927	35,000	2,310,000	3,812,000
Sweet potatoes	1928	109,000	8,284,000	8,284,000
	1927	133,000	11,970,000	8,978,000
Rice	1928	174,000	7,308,000	6,431,000
	1927	174,000	8,039,000	6,914,000
Barley	1928	156,000	3,276,000	2,391,000
	1927	195,000	3,120,000	2,184,000

^a bales, ^b tons.

MINERAL PRODUCTION. About three-fourths of the total yearly value of mineral products of the State came in 1926 from petroleum. The output of petroleum increased considerably in 1927 but declined so greatly in price that the aggregate value of the 1927 product fell considerably short of that of 1926. The quantity produced in 1927 was 213,768,000 barrels; in 1926, 166,916,000. The value of the year's product was: 1927, \$249,600,000 (estimated); 1926, \$308,800,000. Natural gas output was 175,392,000 M cubic feet in 1927, the latest recorded year, as against 134,872,000 M in 1925; its value rose to \$28,165,000 for 1926, from \$19,715,000 for 1925. From natural gas were extracted in 1927, 316,600,000 gallons of gasoline, as against 243,093,000 in 1926; the value of this product was \$13,110,000 for 1927 (estimated) and \$22,760,000 for 1926. Cement production was 5,655,835 barrels in 1927 and 5,007,374 in 1926; cement shipments attained a value of \$10,232,908 for 1927 and \$9,522,701 for 1926. The coal production of the State was, in quantity, 1,326,385 net tons for 1927 and 1,091,158 for 1926; in value, \$1,998,000 for 1927 and \$1,751,000 for 1926. Gypsum production was 533,156 short tons in 1926 and 558,132 in 1925; in value, \$4,126,400 for 1926 and for 1925, \$3,721,954. Clay products totaled \$6,010,981 for 1926 and \$6,298,045 for 1925. The total value of the State's mineral products was, for 1926, \$420,586,730; for 1925, \$351,211,629.

In 1928, for the first time, Texas led all States in the production of crude petroleum with 256,888,000 barrels. The 1928 production of metals was: gold, \$12,000; silver, 1,391,000 ounces; lead, 877,000 pounds; copper, 316,000 pounds.

FINANCE. State expenditures in the year ended Aug. 31, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$56,648,830 (of which \$22,465,370 was aid to local education); for interest on debt, \$202,425; for permanent improvements, \$13,923,107; total, \$70,774,362 (of which \$19,764,148 was for highways, \$8,255,390 being for maintenance and \$11,508,758 for construction). Revenues were \$78,687,485. Of this, property and special taxes formed 33.6 per cent; departmental earnings and charges for officials' services, 5 per cent; sales of licenses and taxation of gasoline, 41.2 per cent. Property valuation was \$3,905,050,651; State taxation thereon, \$26,163,839. Net funded State debt on Aug. 31, 1927, was \$4,364,488.

EDUCATION. Two amendments to the State constitution, bearing on the public-school system, were adopted at the election of November, 1928. One of these empowered the State legislature to create a State board of education to replace the existing board, an ex-officio body consisting of the Governor, the Secretary of State, and the Comptroller. It was designed to bring into existence a less perfunctory type of central educational agency, which should have a more specialized grasp of its problem and at the same time should be more directly responsive to public opinion. To this end, the Legislature was invested with authority to settle the number of members, the length of term, the qualifications, and the duties of a statutory board. The other amendment, as set forth by State Superintendent S. M. N. Marrs in the *Journal of the National Education Association*, extended the limit of school trustees' terms to six years, from two. For the academic year 1927-28, the school popu-

lation of the State was given as 1,370,082. There were enrolled in the public schools of the State 1,232,696 pupils; of these, 1,016,464 were in the elementary grades and 216,232 were in high schools. For the year 1928 the expenditures for public-school education were approximately \$56,000,000. Salaries of teachers in the State averaged \$1140.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 16,429.43. There were built in 1928, 353.3 miles of first, and 30.76 of second, track.

CHARITIES AND CORRECTIONS. The State Board of Control, operating under a statute of 1925, conducted, in 1928, 17 institutions of eleemosynary or reformatory character. Their average population for the year ending Aug. 31, 1928, was 12,987, not counting those on the rolls but absent. In connection with these institutions the board conducted a system of dairies and small hog herds to furnish part of the inmates' nourishment. The institutions were: Confederate Men's Home, Austin, population, 328; Confederate Women's Home, Austin, 100; School for the Blind, Austin, 225; School for the Deaf, Austin, 491; Deaf, Dumb, and Blind Institute, Austin, 208; State Orphans' Home, Corsicana, 565; Home for Dependent and Neglected Children, Waco, 147; Girls' Training School, Gainesville, 178; Juvenile Training School, Gatesville, 912; Austin State School, 610; Rusk State Hospital, Rusk, 1050; Terrell State Hospital, Terrell, 1842; San Antonio State Hospital, 2154; Austin State Hospital, 1986; Wichita Falls State Hospital, 978; Abilene State Hospital, 761; State Tuberculosis Sanatorium, at Sanatorium, 452.

The Texas State Prison had a total of 2325 prisoners received from the courts in 1927, or 43.1 per 100,000 of general population. There were 3864 prisoners confined on Jan. 1, 1928.

POLITICAL AND OTHER EVENTS. Water development assumed a phase of some importance during the year. The State Act of 1925 authorizing the creation of districts for the control, preservation, the distribution of water was declared invalid in March by the Third Court of Civil Appeals, on constitutional grounds, as failing to provide due process of law for affected landholders. The decision, on which appeal was taken to the State Supreme Court, rendered doubtful the validity of bond issues to an aggregate of some millions of dollars, put out by eighteen or more water districts. It was nevertheless reported by the State board of water engineers in July that irrigation projects for the reclamation of about 720,000 acres of land in the valleys of the Nueces, the lower Rio Grande, the Frio, the San Antonio, and other rivers had been authorized within a few months preceding.

The issue of the status of the colored voter in the Democratic party of the State was again brought up by means of an injunction suit brought by a Waco Negro lawyer, R. D. Evans, to prevent the Harris County Democratic Executive Committee from shutting colored persons out from the primary election of July 28. Federal Judge Hutcheson at Houston ruled against the Negroes seeking the injunction, and appeal was taken to the Federal Circuit Court. A ruling of the United States Supreme Court, in a previous action, in favor of an El Paso Negro excluded from the Democratic primary of 1924, had been followed in 1927 by an act of the Legislature placing party membership and voting qualifica-

tions specifically in the determination of the State executive committee of any political party.

Possession of title to mineral rights in some 2,000,000 acres of former State University and school lands was assured June 25 by decisions of the State Supreme Court in suits brought by mineral interests seeking the right to prospect on such lands. The Court held that the act relinquishing to acquirers of school lands fifteen-sixteenths of the minerals found thereon was valid; the Court also affirmed the right of county commissioners to lease county school lands for prospecting. The lands involved in the proceedings were considered to include petroleum prospects of great potential value.

Construction was begun on the section of Intracoastal Canal between Galveston and Port Arthur early in the summer. This section, 68 miles in length, was expected to require \$2,500,000 of the expected construction cost of \$16,000,000 for the entire canal from Corpus Christi to the Mississippi River. A Federal survey to determine the possibility of deepening the channel of the ship canal between Houston and Galveston to 32 feet was ordered in May. Oil production in the State underwent an important development in the form of an order of the State railroad commission, effective May 5, limiting to 150,000 barrels a day the quantity of petroleum that might be taken from the wells of the Winkler County pool, and prorating the output according to the potential open-flow capacity of forty-acre tracts taken as units of measurement. The order was made effective for six months. In order to provide a so-called non-cotton zone as a means to combat the boll weevil, an effort was made in the spring to promote the cultivation in west Texas of grain sorghums as replacement for cotton.

The Houston city commissioners passed in January an ordinance annexing the surrounding settlements of Harrisburg, River Oaks, and Memorial, with a population of about 4000 and an area of 5000 acres. Houston was the scene of the Democratic National Convention in the latter part of June. The Houston Electric Company offered in March to sell its property to the municipality, asserting that it could not earn an adequate return on its investment. Figures on waterborne commerce of Texas ports in 1927, sent out by the U. S. War Department gave the commerce of Galveston at 5,848,230 tons, value \$688,005,589; that of Houston, 12,000,414 tons, value \$466,316,967; Port Arthur, 8,021,823 tons, \$175,464,380; Beaumont, 8,068,306 tons, \$137,780,983. Removal of Baylor University from Waco to Dallas was recommended by the education commission of the Baptist General Convention at Dallas, April 28.

ELECTION. The State went Republican for President for the first time. The so-called Hoover Democrats were active opponents of the Democratic presidential candidate, Alfred E. Smith, in the course of the campaign. Two of their number ran for governor in the Democratic primary in August, but were defeated by Governor Dan Moody. An anti-Smith candidate for Lieutenant-Governor was also defeated. In the election of November 6, however, the Hoover Democrats, combined with the Republican voters, gave a slight plurality for Hoover and Curtis, the Republican National candidates; the State's vote was: Hoover, 367,036; Smith, 341,032. Dan Moody Democrat, was reelected Governor, defeating

W. H. Holmes, Republican. The remaining discord over the matters of the Ferguson administration was considered responsible in part for Moody's not attaining the normal Democratic majority. Tom Connelly, Democrat, was elected United States Senator for the ensuing regular term, defeating T. M. Kennerly, Republican, by a majority approximately the same as Governor Moody's. The Democrats retained all their seats in the State's delegation of United States Representatives.

OFFICERS. Governor, Dan Moody; Lieutenant-Governor, Barry Miller; Secretary of State (appointive) Jane Y. McCallum; Treasurer, W. Gregory Hatcher; Comptroller, S. H. Terrell; Attorney-General, Claud Pollard.

JUDICIARY. Supreme Court: Chief Justice, C. M. Cuerton; Associate Justices, T. B. Greenwood, William Pierson.

TEXAS, UNIVERSITY OF. A State institution of higher education at Austin, with a medical branch at Galveston, and a college of mines at El Paso. The main university opened in 1883. For the autumn term of 1928 the enrollment totaled 6209, and for the summer session, 3158. There were 432 members on the faculty, an increase of three over 1927. The endowment resources of the institution amounted to \$21,060,521, and the income from legislative appropriation fees and income from endowment was estimated at \$2,911,140. The library contained 407,552 volumes. President, Harry Yandell Benedict, Ph.D., LL.D.

TEXAS FEVER. See VETERINARY MEDICINE.

TEXTILE INDUSTRY. The textile industry in the United States during 1928 was marked by a decrease in quantity and value of production from 1927, although the figures for actual sales by both wholesale merchants and manufacturers and the department stores showed but

One of the features of the American textile industry in 1928 was the growth of group buying and selling. This was taking on an aspect quite beyond the mere operation of department or chain stores and involved the formation of corporations for group buying from textile merchants for the use of garment manufactures. On the other hand, there were developed selling enterprises, such as a huge department store chain, where a large output could be distributed by retail.

NEW MILL CONSTRUCTION. According to the annual statistics of the *Textile World*, 200 new mills were built in 1928, as compared with 173 in 1927 and 178 in 1926, the distribution in comparison with previous years being indicated in the accompanying table. The statistics showed an increased activity in 1928 in the field of silk and rayon, with 29 new silk mills being constructed as compared with 19 in 1927, and 8 new rayon plants as compared with 5 in the previous year. Many of the silk mills also were weaving rayon either alone or in combinations with silk materials.

As regards States in which new textile mills were built, the summary referred to placed North Carolina at the head of the list, with 39 new plants, 24 of which were knitting mills and the remainder cotton, silk, and miscellaneous. New Jersey had 23 new mills about equally distributed between knitting, silk, and miscellaneous plants. Virginia and Pennsylvania built as many new wool plants as did New England. In Alabama, 15 new cotton mills were built. Pennsylvania had 3 new woolen plants, and Virginia 3 rayon manufacturing plants.

While cotton-mill construction was on about the same basis as in 1924, 1925, and 1926, it was notable that only 4 of the 37 new mills in 1928 were in the North, 1 in Massachusetts, 1 in New

NEW TEXTILE MILLS BUILT IN THE UNITED STATES, 1918-28

[From *Textile World*]

	1928	1927	1926	1925	1924	1923	1922	1921	1920	1919	1918
Cotton	37	23	34	40	39	74	57	46	89	74	29
Wool	12	10	9	17	15	38	34	36	30	54	24
Knitting	78	70	52	84	57	73	94	103	59	84	120
Silk	29	19	37	38	22	26	24	31	71	61	49
Rayon	8	5	8	11	53	21	29	26	15	16	27
Miscellaneous	36	46	38	49							
Total	200	173	178	239	186	232	238	242	264	289	254

little change. Intense competition prevails within the industry and studies were being made of changing conditions. The wool industry in particular seemed to be stabilized during 1928 with sufficient production to meet demands and yet to maintain prices. In the manufacture of cotton products, there was more price variation with production at times increasing over total demand. The consumption of wool and cotton during the year showed curtailment of approximately 3 and 11 per cent, respectively, from 1927. The silk industry in 1928 showed little progress, either in volume or prices, though there was a gain of 3½ per cent in consumption by manufactures, but it was quite manifest that still further changes were required before the adjustment to the growing use of rayon was complete. Rayon as discussed under that head, continued its important growth and had become no mean factor in the world's textile situation, with increased consumption sometimes in spite of depressed conditions.

Jersey, 1 in Rhode Island, and 1 in Wisconsin. The increase of 14 over the previous year was accounted for by the Southern States, in which there were also extensive enlargements and additions. The largest Southern mill construction of the year was that of the Alabama Mills Company with headquarters at Birmingham, and 10 plants in other places.

In 1928 there were 12 new wool mills located in Massachusetts, Rhode Island, Pennsylvania, Utah, and Virginia, with 2 in Canada; while Massachusetts, Rhode Island, and Pennsylvania also reported enlargements and improvements. The increase in the number of new knitting mills from 70 to 130 was accounted for by 24 new plants in North Carolina, 16 in Pennsylvania, 7 each in Tennessee and New Jersey, 6 in Georgia, and 4 in Canada. Pennsylvania also led in enlargements and improvements with 139 projects.

There were 7 new silk mills built in New Jersey in 1928 and 4 new mills each in Penn-

sylvania, North Carolina, and Texas. In Virginia, 3 new mills were built, while 7 other States had one each. In Pennsylvania 15 projects for enlargement and improvement were under way.

Of the 8 new rayon plants built during 1928, 3 were located in Virginia and 1 each in Georgia, Massachusetts, North Carolina, Rhode Island, and Pennsylvania. Enlargements and improvements to 5 existing plants also were reported.

Under the head of miscellaneous, 36 new plants were reported during 1928 of which 23 were dyeing, bleaching, and finishing plants; there were 5 braid, 2 bagging, 4 fabric mills, with 1 flax mill and 1 asbestos plant. There were 50 miscellaneous enlargements and improvements reported during the year, 14 being reported in New Jersey, and of the total, 39 involved dyeing, bleaching, and finishing plants.

In the cotton-spinning industry on Dec. 31, 1928, according to the U. S. Census, there were in place 35,264,046 cotton-spinning spindles with 30,622,172 active during the month; the latter number to be compared with 30,596,840 for November, 30,315,086 for October, 28,227,090 for September, 28,243,508 for August, 28,159,676 for July, and 31,722,276 for December, 1927. The accompanying table, also from the Census, shows the total number of cotton-spinning spindles in place and the number active during December, 1928, arranged by States.

States	Spinning Spindles	
	In place December 31	Active during December
United States	35,264,046	30,622,172
Cotton-growing States	18,615,284	17,931,892
New England States	15,137,526	11,411,822
All Other States	1,511,236	1,278,458
Alabama	1,709,404	1,614,276
Connecticut	1,121,464	1,041,168
Georgia	3,078,126	2,975,048
Maine	1,058,872	750,108
Massachusetts	9,109,084	6,609,332
Mississippi	177,118	147,446
New Hampshire	1,414,086	993,900
New Jersey	373,936	339,220
New York	754,160	620,330
North Carolina	6,196,208	5,921,054
Rhode Island	2,317,116	1,900,998
South Carolina	5,512,250	5,445,098
Tennessee	602,452	583,782
Texas	281,908	247,224
Virginia	709,056	679,254
All Other States	848,806	753,934

The cotton industry in 1928 experienced a serious strike at New Bedford, Mass., which tied up 56 mills for 25 weeks. (See STRIKES AND LOCKOUTS.) Notwithstanding the decreased production due to this cessation of work, the industry did not experience any price improvement. The Cotton-Textile Institute continued to function during the year, particularly seeking to regulate production to demand and consumption.

During the year, a feature of the American wool industry was the formation of the Wool Institute which, representing the members of the trade, aimed to develop cooperation in the solution of problems and the correction of abuses. It proceeded to take up the collection and distribution of statistics of production, sales, unfilled orders, and stocks, so that there would be available for mill men and selling agents adequate data on which to plan their various activities. Another event of the year was the

liquidation of a number of mill organizations and the sale of machinery either obviating other equipment or increasing the plants of stronger organizations. During the year, there was not much fluctuation in the general price level of fabrics.

EXPORTS. The exports of textile fibres and manufactures in 1928 aggregated \$1,124,495,000, a gain of 10 per cent, or a substantial increase over the value exported in 1927, \$1,021,357,000. Raw cotton, including linters, aggregating 8,546,419 bales valued at \$912,849,000, accounted for 81.8 per cent of the total values of the textile group in 1928. The exports of raw cotton decreased 7 per cent in volume over 1927, but gained in value 11.5 per cent. Germany, with cotton valued at \$217,891,000, was the leading customer, followed by the United Kingdom with \$211,399,000, the shipments to the latter country increasing from 1,648,175,000 bales in 1927 to 1,997,395,000 bales in 1928. See COTTON.

Excluding raw cotton and linters, the total value of exports of all classes of textile fibres and manufactured products increased from \$195,051,000 in 1927 to \$240,486,000 in 1928, a gain of 4.8 per cent. The 1928 total, according to *Commerce Reports*, included the following principal groups with their respective values: Cotton semi-manufactures, \$24,233,000; cotton manufactures, \$11,418,000; silk manufactures, \$18,648,000; coated or waterproofed fabrics, \$8,500,000; rayon manufactures, \$6,351,000; wool manufactures, \$4,870,000; jute manufactures, \$3,746,000; cordage, except of cotton or jute, \$4,655,000; hats and caps, \$4,037,000; linoleum and felt-base floor coverings, \$3,028,000; and absorbent cotton, gauze, and surgical dressings, \$2,238,000. With the exception of rayon manufactures, the value of each of the foregoing groups was greater in 1928 than in 1927.

The United States exports of cotton cloth, duck, and tire fabrics in 1928 aggregated 546,863,000 square yards, valued at \$79,296,000, as compared with 565,021,000 square yards, with a value of \$76,256,000, in 1927—a loss of 3 per cent in quantity but a gain of 3 per cent in value. The latter percentage reflects an advance in the average unit price of the goods exported from \$0.136 in 1927 to \$0.145 in 1928.

The exports of all classes of hosiery totaled 5,866,091 dozen pairs, valued at \$19,000,000, in 1928, compared with 6,287,078 dozen pairs, worth \$19,302,000, in 1927. The value of silk-hosiery exports increased from \$8,021,000 in 1927 to \$9,658,000 in 1928, while the value of shipments abroad of cotton hosiery dropped from \$7,330,000 to \$6,728,000 and of rayon hosiery, decreased from \$3,951,000 to \$3,613,000. Of the total value, \$19,999,000 in 1928, women's hosiery accounted for \$14,830,000, men's socks for \$3,711,000, and children's hosiery for \$1,458,000. Silk hosiery represented about 60 per cent of the shipments of women's hosiery abroad in 1928.

Cotton hosiery was the most important in the exports of both men's and children's hosiery. The principal markets in 1928, from the standpoint of the value of the hosiery exported, were as follows: Australia, \$2,070,000; Cuba, \$2,037,000; British South Africa, \$2,010,000; Argentina, \$1,588,000; Canada, \$1,588,000; and the United Kingdom, \$1,300,000. Australia, British South Africa, and Argentina were the largest export outlets for American-made silk hosiery,

while the principal foreign markets for both cotton and rayon hosiery were Cuba, South America, and Canada.

American clothing manufacturers were gradually developing export interest and the shipments of wearing apparel in 1928 showed some gratifying increases. The most important gains over 1927 were as follows: Exports of knitted-wool bathing suits rose in value from \$342,000 in 1927 to \$723,000; cotton overalls, breeches, and pants from \$166,000 to \$421,000; cotton dresses, skirts, and waists from \$229,000 to \$511,000; silk dresses, skirts, waists, and blouses from \$1,182,000 to \$1,818,000; and women's and children's wool clothing from \$373,000 to \$456,000.

IMPORTS. In the year 1928 the United States imported textile fibres and manufactures thereof amounting to \$919,918,000, or a decrease of 3.6 per cent from \$954,453,000, the value in 1927; 60 per cent of the total value of the imports in the textile group in 1928 were accounted for in unmanufactured textile fibres, namely, raw cotton, jute, flax, hemp, manila, sisal, henequen, kapok, other vegetable fibres, wool, mohair, animal hair, human hair, raw silk, and rayon. The imports of raw cotton amounted to 172,037,000 pounds, valued at \$42,797,000, against 205,609,000 pounds, valued at \$45,669,000 in 1927. These imports of raw cotton included types not produced in sufficient quantities in the United States, and Egypt was the leading source, supplying 89,231,000 pounds, or 51.9 per cent of the total imports, as against 122,776,000 pounds, or 59.7 per cent, in 1927. Egypt, however, furnished an even greater percentage than indicated, as the bulk of the importation from the United Kingdom, 8,598,000 pounds in 1928 and 13,388,000 pounds in 1927, was of Egyptian origin. Other sources of raw cotton in the order named were China, Mexico, British India, and Peru.

The imports of raw wool into the United States decreased both in quantity and value in 1928 from the amounts in 1927. There were imported in 1928, 240,360,000 pounds, valued at \$77,727,000 as against 264,507,000 pounds in 1927 valued at \$81,754,000, a loss of 9 per cent in quantity and of almost 4 per cent in value. All of the leading supplying countries with the exception of British India and China showed a decline, the leading imports being as follows: The United Kingdom, 49,906,000 pounds in 1928, as against 61,238,000 pounds in 1927; Australia, 26,347,000 pounds in 1928, as against 39,389,000 pounds in 1927; Argentina, 22,865,000 pounds in 1928, as against 27,588,000 pounds in 1927; Uruguay, 6,862,000 pounds in 1928 and 16,828,000 pounds in 1927; Canada, 7,539,000 pounds in 1928 and 9,021,000 pounds in 1927; and British South Africa, 4,410,000 pounds in 1928, and 5,591,000 pounds in 1927. British India, China, and Hong Kong increased their imports of carpet wool by 2,719,000 and 5,931,000 pounds, respectively, over 1927.

Among the textile materials imported into the United States, raw silk is the largest and in 1928 showed an increase in quantity, but a decrease in value, the receipts in the earlier year amounting to 74,204,593 pounds, valued at \$390,365,475 as compared with 75,489,315 pounds, valued at \$367,997,250 in 1928, there being a drop in the average import price per pound from \$5.275 in 1927 to \$4.875 in 1928, which was the lowest unit value for any year's imports of raw

silk since 1916, when the average import price per pound was \$4.46. In 1928 Japan supplied 64,111,650 pounds of the raw silk imported, or 85 per cent, and China, 10,527,407 pounds, or 14 per cent. In 1927 Japan supplied 61,796,651 pounds, or 83.5 per cent, and China, 10,787,770 pounds, or 14.6 per cent. See **SILK**.

The United States for its raw supplies in the textile industries other than raw cotton, is dependent upon foreign sources, so that jute, flax, hemp, and other fibres figure in the imports as well as manufactured articles derived from these materials. Imports of jute and manufactures thereof into the United States increased in value from \$90,087,000 in 1927 to \$101,276,000 in 1928. Raw jute and burlap came principally from India. The imports of unmanufactured jute, including jute butts, declined in quantity from 92,415 tons in 1927 to 90,049 tons in 1928, and in value from \$12,154,000 to \$11,657,000 in 1928. On the other hand burlaps in 1928 amounted to 619,981,000 pounds, valued at \$80,086,000 in 1928, as compared with 569,649,000 pounds, valued at \$67,249,000 in 1927.

Unmanufactured flax was imported to the amount of 5539 tons in 1928, as against 4496 tons in 1927, and imports of hemp amounted to 1634 tons in 1928 as against 1697 tons in 1927. Manufactures of flax, hemp, and ramie imported into the United States declined in value from \$52,608,000 in 1927 to \$46,415,000 in 1928. In 1928 as usual, linen accounted for the greater amount of the fabric which aggregated \$23,342,000 with laces and embroideries amounting to \$6,726,000, handkerchiefs, \$5,800,000, and towels and napkins, \$3,179,000.

Other fibres entering into the textile industry than those already discussed were reported to the amount of 35,569,000 tons in 1928, as compared with 39,286,000 tons in 1927. The quantity aggregated 215,743 tons and 206,009 tons in the two years, respectively, cordage fibres constituting a large bulk of this material which included manila or abaca from the Philippines, sisal and henequen from Mexico and The Netherlands, istle from Mexico, New Zealand fibre from New Zealand, and kapok from Java and Madura.

Notwithstanding the very large domestic production of rayon estimated for 1928 at approximately 98,000,000 pounds (see **RAYON**), the United States during the year imported 12,742,000 pounds of foreign rayon yarns valued at \$10,906,000, as compared with 16,236,000 pounds, valued at \$13,664,000 in 1927. Of the imports of rayon yarn, about 37 per cent came from Italy, 27 per cent from Germany, 17 per cent from France, 12 per cent from The Netherlands, and smaller amounts from Belgium, Switzerland, Austria, and the United Kingdom.

The United States in 1928 increased its imports of textile manufactures from the value of \$5,397,000 in 1927 to \$6,323,000 in 1928, there being included in the latter figure \$3,012,000 worth of cotton waste and \$3,290,000 of yarns and warp. The value of foreign cotton manufactures brought into the United States in 1928 amounted to \$62,791,000 as against \$60,800,000 in 1927. In 1928 imports including cotton cloth amounted to \$15,840,000; miscellaneous cotton fabrics, \$9,119,000; wearing apparel, \$16,985,000; and laces, embroideries, etc., \$11,252,000. There was a decline, however, in the imports of cotton cloth which came principally from the United Kingdom, but an increase in value. The

United Kingdom supplied 36,237,000 square yards in 1928 with Switzerland second with 13,546,000 square yards, and lesser amounts coming from Czechoslovakia, France, and Germany.

The imports of wool semi-manufactures in 1928 were valued at \$16,131,000, as compared with \$14,579,000 in 1927, and the principal items were wool noils valued at \$6,333,000, wool rags, flocks, and mungo valued at \$655,000, and wool waste valued at \$2,691,000. The wool manufactures imported into the United States in 1928 totaled in value \$62,260,000, including woven fabrics and mohair, \$19,285,000, carpets and rugs, \$21,454,000, and wearing apparel, \$18,415,000. The United Kingdom sent to the United States 871,000 pounds of worsted and 6,587,000 pounds of woollens out of total imports of 1,191,000 pounds of worsted and 8,677,000 pounds of woollens.

There were imported in 1928, 3,185,000 square yards of wool carpets and rugs valued at \$21,454,000 of which Persia supplied 968,000 square yards valued at \$8,275,000; China and Hong Kong, 400,000 square yards valued at \$2,960,000; Turkey in Asia and Europe, 377,000 square yards valued at \$1,956,000; the United Kingdom, 277,000 square yards valued at \$1,636,000; and Greece, 130,000 square yards valued at \$1,208,000.

There was a decline in the value of silk manufactured goods from \$42,234,000 in 1927 to \$41,298,000 in 1928. Broad silks amounting to 3,448,000 pounds valued at \$16,426,000 were imported in 1928, of which Japan supplied 2,040,000 pounds valued at \$6,724,000. France, Switzerland, China, Hong Kong, and Italy were other sources of silk fabrics. Pile fabrics, notably velvets, increased from 708,000 pounds, valued at \$4,596,000 in 1927, to 1,048,000 pounds, valued at \$7,579,000, in 1928. Silk wearing apparel imported in 1928 amounted in value to \$7,653,000, France supplying the bulk of the imports. Silk laces and embroideries to the value of \$4,081,000 were imported in 1928.

THEATRE. Whatever distinction accrues to the year 1928 in the American theatre must be of a negative character. Its most salient feature was the unprecedented dearth of good stage material and it will probably pass into history as among the least profitable periods on record. The situation was already making itself felt when the year commenced and continued with increasing force throughout the twelvemonth. Yet, strangely enough, despite the shortage of worthwhile plays, the building of new theatres in New York City went on as usual, with the result that before the close of the year, and at the height of the season, several stood vacant, a condition quite new to the New York stage.

The outcome of the matter was that almost anything in the form of a play could get itself produced, but as the public refused to modify its standards of amusement, the casualties became more and more numerous. Audiences dwindled correspondingly; people seemed to be getting out of the habit of theatre-going and producers everywhere were bemoaning the sad state of their business—all but the fortunate few who could boast of successes and were harvesting the receipts accordingly.

An exception to the general charge of mediocrity must be made in favor of the musical comedies, which averaged higher in quality than usual and prospered in consequence. Among the best were *Rosalie*, *The Three Musketeers*, *Rain*

or *Shine*, *The New Moon*, *Good Boy*, *Hold Everything*, *Three Cheers*, *Animal Crackers*, and several items in the customary quota of *Follies*, *Vanities*, and other forms of the revue type. One of the cleverest of these was the *Grand Street Follies*; another was *This Year of Grace*. The latter provided the incomparable Beatrice Lillie with the medium for her comic genius which she had been seeking ever since the last of the *Charlot Revues*. Associated with her as both author and co-star was Noel Coward who had previously supplied many of the skits in which she had appeared with such hilarious effect. There was also *Paris* written to the measure of the piquant and Gallie Irene Bordonni.

Beyond these, and among the regular plays, few reached even the goal of one hundred performances which in itself constitutes but a moderately fair run for New York—the standard by which an American success must be gauged—in this day and generation. To keep the theatres open, recourse was had to an uncommonly large number of return engagements of the more recent hits, but these seldom elicit much patronage even in normal times, much less when used as stop-gaps. It was noticeable that nearly all the plays which did achieve success were the work of experienced, established authors, but not all the output from this class was successful.

The murder-mystery type of melodrama was especially prevalent during the first half of the year, though not particularly popular; wherefore examples grew less frequent after the summer lull. In fact, only *The Silent House*, by John G. Brandon and George Pickett, a thriller made exceptionally sinister by the use of Chinese characters and trappings, and *The Perfect Alibi*, by A. A. Milne, done in England as *The Fourth Wall*, could be reckoned as genuine hits, though *Cock Robin*, by Philip Barry and Elmer Rice, did reach the century mark.

Philip Barry's *Paris Bound* and *The Royal Family* of George S. Kaufman and Edna Ferber, brought out Dec. 27, and Dec. 28, 1927, respectively, and discussed in the 1927 YEAR BOOK, continued among the successful plays of 1928.

The Theatre Guild produced the first important play of the year—Eugene O'Neill's *Marco Millions*, a fairly spectacular piece in which heart-breaking proclivities are attributed to the world's first commercial traveler, Marco Polo. This was followed by another O'Neill drama, *Strange Interlude*, which, first done at the end of January, was still running prosperously as the year ended. Moreover, the Pulitzer Prize for the most meritorious and significant play by an American author was awarded for the season of 1927–28 to this work—a verdict with which many thinking critics seriously disagreed. The play deals with preëminently psychopathic matters, ending in a rather vain attempt at symbolism. The play is in nine acts with its characters not merely speaking the customary dialogue but also voicing their inmost thoughts in parallel columns, as it were, while the action waits.

The Theatre Guild, no longer an experimental art group but rather a highly commercial, shrewd and prosperous organization, went O'Neill one better in staging the piece by starting the performances at 5.30 in the afternoon and continuing until 11 with an intermission of an hour and a half for dinner.

The season's profitable offerings also included *Diamond Lil*, by Mae West; *The Front Page*, an



Photo by White Studio, New York

"THE ROYAL FAMILY"

Jefferson DeAngelis and Haidee Wright

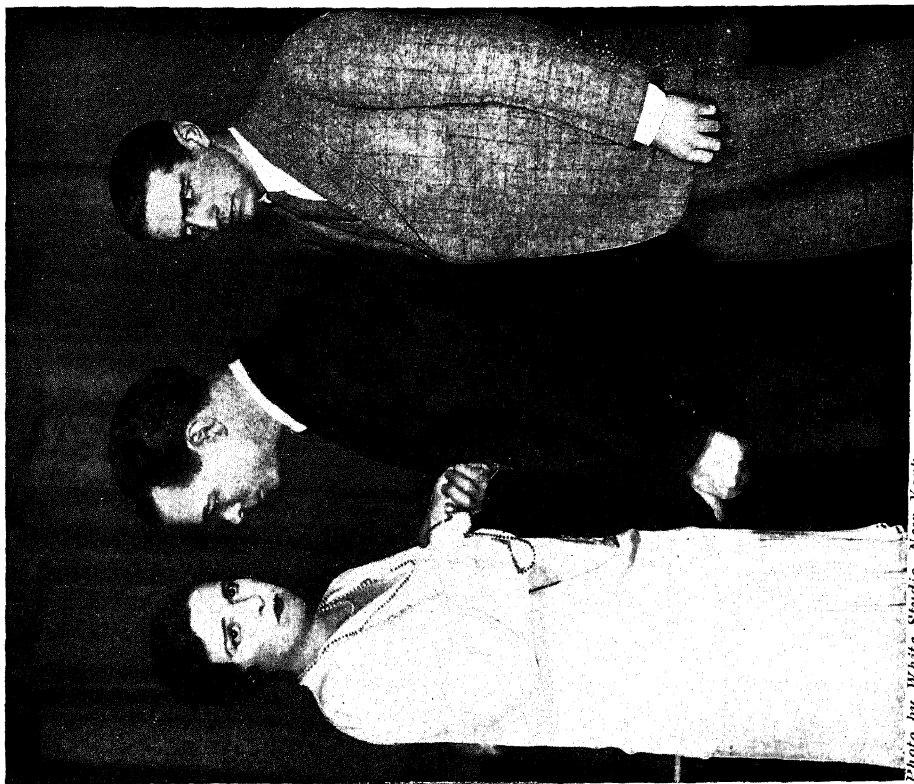


Photo by White Studio, New York

"PARIS BOUND"

Madge Kennedy, Donald MacDonald, and Donn Cook

amusing portrayal of newspaper life, by Ben Hecht and Charles MacArthur; another newspaper comedy by Ward Morehouse entitled, *Gentlemen of the Press*; *Jarnegan*, a dramatization of Jim Tully's novel of Hollywood and the moving-picture industry, with Richard Bennett in the main part; and, to a lesser degree, *Jealousy*, of which further mention will be made later.

Revivals were frequent but, as usually happens unless equipped with casts bristling with great names, met with scant favor. Somerset Maugham's play *Our Betters* had, however, the unique distinction of far surpassing, in a revival, the record of its original presentation ten years before. This comedy is a scathing arraignment of the wealthy American women who go title-seeking to London, and was quickly and tactfully withdrawn soon after its first showing as not conducive to the cordiality of inter-allied relationships in time of war. Brought to light again in February, 1928, the piece proved a real drawing card, partly by virtue of the clever performances of Ina Claire and Constance Collier.

Another praiseworthy, though less successful, revival was that of Galsworthy's *The Silver Box*, one of the first of his plays to be done in New York when presented by Ethel Barrymore for a few performances some two decades previously. Isobel Elsom, a talented young English actress, and James Dale handled the chief rôles capably, but New York demands bigger names for popularizing the older plays.

Diversion, a second piece by John Van Druten, whose *Young Woodley* had created so favorable an impression, proved disappointing, in spite of excellent work by a cast mainly British, including Richard Bird, Cathleen Nesbitt, and Sir Guy Standing. It was handicapped by a grim ending, too late revised to a less dismal outcome.

The final production of the Theatre Guild for the spring season was a modern adaptation, via Germany, of Ben Jonson's *Volpone*, or *The Fox*, with the Elizabethan flavor somewhat modified. This came as a genuine novelty. Robert E. Sherwood, author of *The Road to Rome*, one of the hits of the previous season, followed this with an amusing satire on modern Continental monarchies, involving a particularly pointed dig at the recent visit of Elizabeth of Rumania to the United States. Its title was *The Queen's Husband*, and Roland Young was the star.

George M. Cohan enjoyed, as author, moderate success with a farce called *Whispering Friends*, while *Rope*, a dramatization of T. S. Stribling's story, *Teeftallow*, though providing an interesting and atmospheric picture of the ignorance, prejudice, and fanaticism prevalent in the Tennessee mountains, was nevertheless unable to catch the popular fancy.

Even so experienced a playwright as Zoë Akins failed to achieve success with a nondescript piece entitled *The Furies*, in spite of the presence of no less a personage than Laurette Taylor as its star. The work is remembered chiefly as the basis of the year's most perfect caricature, introduced by Albert Carroll in the *Grand Street Follies*.

Two comedies whose announcements appeared almost simultaneously were a dramatization of Floyd Dell's novel, *An Unmarried Father*, and an original piece by Edward Childs Carpenter entitled, *The Bachelor Father*. The latter, sponsored by David Belasco, was the first to reach

the stage, while the former, whether or not by reason of the similarity of name, which was as far as the resemblance went, was withheld until the close of the other's successful run in the early fall, when it was put forth as *Little Accident*, and in its turn scored a hit. Granted the sophistication of topic in each case, both plays handled highly diverting situations without offense and were thoroughly enjoyable.

By late spring, the general apathy toward the stage was quite possibly responsible for the brevity of the life of a pleasant trifle by Harrison Owen—*The Happy Husband*—wherein Billie Burke, as star, obligingly divided the honors with A. E. Matthews, Lawrence Grossmith, Walter Connolly, and Irene Browne.

Also late in spring came the classic revivals with their imposing star casts, to which allusion has already been made. They consisted of the periodically recurrent *She Stoops to Conquer* and *Diplomacy*, the former most engagingly performed, the latter not so well as on certain previous similar occasions; after which The Players came forth with a genuine novelty for the club's annual week's festival in an Elizabethan comedy, Farquhar's *The Beau's Stratagem*.

Shakespeare was represented during the year, in so far as New York was concerned, by but four productions, of which three came before summer. The first was Winthrop Ames' beautiful mounting of *The Merchant of Venice* with George Arliss as a highly interesting Shylock and Peggy Wood a captivatingly girlish Portia; then came Walter Hampden's imposing and ponderous presentation of the historical pageant of *King Henry the Fifth*, which the public evidently did not crave to see. This in turn was followed by a limited three weeks' engagement of *The Merry Wives of Windsor* with Mrs. Fiske, Otis Skinner, and Henrietta Crosman infusing new life and zest, as well as unaccustomed refinement, into the usually tedious old comedy. In the autumn, *Macbeth* was put on with Lyn Harding, Florence Reed, Basil Gill, and William Farnum in the principal parts and with stage settings designed by Gordon Craig.

With the arrival of autumn and a new season, the tendencies and conditions already noted, particularly the prevalent mediocrity, became still more pronounced. To every even half-way success there were fully three failures, except among the musical productions, where the hits and the casualties were about evenly balanced.

Of the two plays already mentioned as reflecting phases of newspaper activities, *The Front Page* promptly took its place among the successes, but *Gentlemen of the Press* gave up the struggle before the holidays. Both were unquestionably entertaining in their respective ways entirely aside from their marked vulgarity of utterance, which was proffered as true to the life depicted.

Three pieces designed to appeal especially to baseball and pugilistic enthusiasts went speedily by the board. Of these, *Elmer the Great* was the work of no less popular a humorist and sports commentator than Ring Lardner, while of the two featuring pugilism *The Big Fight* had Jack Dempsey (himself) and Estelle Taylor (Mrs. Dempsey) as the chief performers.

In September another lasting hit made its appearance in Lonsdale's *The High Road*, one of the London successes of the preceding year. This

comedy treated the subject of intermarriage between the aristocracy and the stage from a new and refreshing angle and closed on a note of convincing uplift. Incidentally, it afforded opportunities for very enjoyable acting by Edna Best, Herbert Marshall, Fred Kerr, H. Reeves-Smith, and Hilda Spong, Britishers all.

Another September arrival still current as the year closed was *Jarnegan*, already mentioned for its violent language. *Machinal*, produced at about the same time, was an honest and interesting attempt to tell a straightforward, intelligible, tragic story of cause and effect in terms of ultra-modern, impressionistic drama. Sophie Treadwell was the author and a gifted young actress, Zita Johann by name, was the outstanding player.

Similar in method of staging, but far less direct in its message, which, after all its clumsy and laborious telling, was nothing more than the hackneyed and unquestioned axiom that "riches aren't everything," was *Mr. Moneybags*, by Channing Pollock, who, if the press is to be believed, was greatly disgruntled by the public's failure to be interested and impressed by his sermon.

Gods of the Lightning, by Maxwell Anderson and Harold Hickerson, was a vivid and arresting drama based on the main features of the famous case of Sacco and Vanzetti as the authors interpreted them and arguing against what they conceived to have been a great injustice. But whatever the facts or the merits of the case, the play came too late to be of any service and the theatre-going public seemed content to let the matter remain a closed book—this in spite of highly effective acting by Charles Bickford, Horace Braham, and Leo Bulgakov.

The Actors' Theatre, quiescent for many months, came to life again with the presentation of a simple and unassuming but gripping little domestic tragedy entitled *Exceeding Small*, the work of Caroline Francke. Here the element of popular appeal was not too pronounced and some experimenting was done with the ending as a compromise between art and demand. Eric Dressler and Ruth Easton acquitted themselves with great credit as hero and heroine and the piece remained in view from late October until after Christmas.

In so disastrous a season, a play with but two characters and a single scene was an obvious godsend. Such a one was *Jealousy*, adapted, with seemingly but little change of flavor, by Eugene Walter from the French of Louis Verneuil. Unmistakably Gallic in tone, it contained passages of startling frankness, and supplied an engrossing test of the ability of its diminutive cast to sustain interest in their efforts throughout an entire evening. After various combinations of players had been tried, *Jealousy* finally reached New York with Fay Bainter and John Halliday as the ultimate choice, and they stood the aforementioned test admirably.

Equal, but more sugared, frankness characterized a frothy trifle called *Young Love*, by Samson Raphaelson, author of *The Jazz Singer*, but frankness made so utterly disarming by the spirit in which it was handled by both playwright and actors that it would be difficult seriously to find fault on this score. This piece employed four players, all well versed in the deft, light, comic touch essential to such a case—Dorothy Gish (late of the screen), James Ren-

nie, the boyish Tom Douglas, and Catherine Willard.

Late in October, Walter Hampden reopened his theatre with an elaborate but rather absurd drama depicting episodes in the life of Buddha and entitled *The Light of Asia*. After its extremely brief career, he spent the rest of the year in trying to revive interest in one after another of his successes of recent seasons.

The Theatre Guild also suffered a rebuff with their first offering of the autumn, a ponderous production of Goethe's *Faust*. They soon discovered that their modern style of acting was quite unsuited to the demands of the old legend and discarded the work just as quickly as their subscription arrangements permitted. Their next piece met with rather better success—a revival of Shaw's *Major Barbara*, with Winifred Lenihan and Dudley Digges in the leading rôles, while the third, *Wings Over Europe*, by Robert Nichols and Maurice Browne, proved to be an odd but uncommonly interesting mixture of satire, poetry, symbolism, and melodrama, affording an opportunity, of which full advantage was seized by a young actor named Alexander Kirkland, to exhibit a striking portrayal of a highly imaginative figure. On New Year's Eve, the Guild presented its fourth offering, *Caprice*, from the Viennese of Sil-Vara, with Alfred Lunt and Lynn Fontanne in the principal rôles, making, with *Strange Interlude*, four attractions under its banner running concurrently.

The newest Molnar piece, *Olympia*, with two English favorites and one American—Fay Compton, Ian Hunter, and Laura Hope Crews—in the salient parts, enjoyed but a brief run, due, possibly, in some degree to an unsympathetic finale. Meanwhile, several far less pretentious works, such as *Courage*, *This Thing Called Love*, and *The Grey Fox*, a play centring about the personality of Machiavelli, were settling down to the enjoyment of unexpectedly good fortune.

November brought a gruesome melodrama in the stage version of Hugh Walpole's *Portrait of a Man with Red Hair*, an extraordinarily gripping and uncanny thing which, however, lasted but a brief time despite Edward G. Robinson's vivid acting of Crispin, the sadist. A rather novel mystery play, without a murder, by the prolific Owen Davis, and known as *To-night at Twelve*, was still visible as 1928 passed into history.

The week of November 18 set a record for the glamour of the authors' names represented in its roster of offerings—with plays by Shakespeare, Ibsen, Shaw, Tolstoi, Dumas, and Maugham. The Shakespeare and Shaw items have already received mention above. The Ibsen work was *The Wild Duck*, the second showing of the same play by the Actors' Theatre, with Blanche Yurka again the Gina. The Tolstoi number was the German version of *The Living Corpse*, known also as *Redemption*, in which an effort was being made to exploit Alexander Moissi. While in America the preceding year with the Reinhardt organization, he had scored a distinct success, particularly in this piece. The return engagement nevertheless proved an utter fiasco. Walker Whiteside dug up as his season's vehicle Charles Coghlan's old version of Alexander Dumas' *Kean*, to which the name of *The Royal Box* was attached. Finding it not over-popular, he switched on Christmas night to a new piece dealing with modern Japan—and by the end of that week was ready to switch back again.

The Maugham play was *The Sacred Flame*, an interesting dissertation presenting startling modern slants on two of the Ten Commandments. Too obvious playwriting was conceded as the explanation of its inability to attain success. Jane Cowl, also, figured in that eventful week as both author (or co-author) and star of a saccharine trifle called *The Jealous Moon*, of the Pierrot-Pierrette brand.

Before November ended, a handful of new hits had made their appearance in Philip Barry's *Holiday*, known earlier as *The Dollar*; a comedy by Townsend Martin starring Alice Brady and bearing the misleading title of *A Most Immoral Lady*; a dramatization of Edith Wharton's novel of Old New York, *The Age of Innocence*, with Katharine Cornell as the Countess Olenska; a somewhat lurid, exotic drama for Helen Menken—*Congai*—based on a novel of the same name by Harry Hervey; and A. A. Milne's clever murder mystery, *The Perfect Alibi*.

At the same time came the first of three plays depending for their major effects upon mechanical devices. Austin Strong was the pioneer and, lacking inspiration in the matter of nomenclature, called his contribution *A Play Without a Name*. Its novel feature was a scene purporting to represent, impressionistically, the inside of the hero's brain, and the workings thereof. Mr. Belasco next came forward, after lengthy delays due to the necessity of virtually making over the stage and other parts of his theatre for the occasion, with an adaptation of Molnar's *The Red Mill*, starring Lenore Ulric and called *Mima*. This provided Mr. Belasco with another of his apparently cherished chances to dig in the dirt, as well as to go the limit in the matter of stage effects. The scene was Hell, and the mechanism that virtually filled the stage was a satanic device capable of reducing the veriest saint in one hour to a low moral state such as it would require twenty years of life in a metropolis like New York to attain. Yet virtue was triumphant in the end and the machine collapsed. Sidney Blackmer figured as Miss Ulric's and the Devil's intended victim. And, finally, almost at the tag end of the year, came a prophetic piece with the title of *To-morrow*—a vision of the day when all the comforts of life will be regulated by radio-activity, having for its big scene the first elopement and pursuit by airplane that the drama had yet afforded.

December brought back to New York Ethel Barrymore, after a year of touring, and to a new theatre named for her. The play, *The Kingdom of God*, done into English by the Granville-Barkers from the Spanish of G. Martinez Sierra, was but the first of a series planned for her use during the season of 1928-29. It provided Miss Barrymore with an effective medium for the display of various facets of her resourceful art, but contained few of the elements that make for popular success. Disconnected, save for the recurrent presence of the one character, it depicted three periods in the life of a Sister of Mercy, at the ages of 19, 29, and 70.

December also added three names to the list of enjoyable musical attractions—*Whoopee*, *The Red Robe*, and *The Houseboat on the Styx*, the latter based, of course, on John Kendrick Bangs' droll tale.

During the year the energetic Eva Le Gallienne added some seven new items to her Civic Repertory list, of which five still figured in her

bills at the end of December. These were creditable presentations of Ibsen's *Hedda Gabler*, Molière's *Le Bourgeois Gentilhomme* (called in translation *The Would-Be Gentleman*), Bernard's *L'Invitation au Voyage*, also adapted from the French, Chekhov's *The Cherry Orchard*, and especially for the Christmas season, a revival of Barrie's *Peter Pan*. An important recruit to the acting company was Nazimova.

"Little theatre" groups and amateur organizations were active throughout the United States, as evidenced particularly by the number of entries in the annual tournament for the Belasco Trophy in New York in May. Outstanding events of this category were the awarding of said Trophy to a group from Scotland and of other prizes to aggregations from Georgia; the production by the Pasadena (Calif.) Community Theatre of Eugene O'Neill's *Lazarus Laughed*; and the banning of a projected performance of the Harvard Dramatic Club by the police authorities of Boston.

Inasmuch as the British and the American theatres are so largely dependent upon each other for attractions, it was not surprising that New York conditions were reflected in London during the year. The English, however, are more adaptable to such emergencies by virtue of a greater interest in standard drama and by an absence of the American insistence upon "original casts." It is a frequent occurrence there for plays that have met with special favor to be done again and again by varying aggregations. For instance, a feature of the London season was a repetition of *The Constant Nymph*, with Jean Forbes-Robertson as the Tessa and Raymond Massey as the Lewis Dodd. This same rising young actress was also seen as both Juliet and Ophelia at the reconstructed Old Vic.

Among the importations from the United States presented in London during 1928 were such recent New York hits as *The Trial of Mary Dugan*, *Gentlemen Prefer Blondes*, George Cohan's *The Baby Cyclone*, *The Barker*, *The Command to Love*, the musical *Show Boat* (at the end of December in its second year in New York), *The Road to Rome*, with Philip Merivale the Hannibal in England as in America, *Her Cardboard Lover*, with the English Leslie Howard repeating his American success in the title rôle and Tallulah Bankhead playing opposite, Behrman's *The Second Man*, Channing Pollock's *The Enemy*, and Elmer Rice's *The Adding Machine*; also other pieces of Yankee origin in *March Hares*, *Sauce for the Gander*, and O'Neill's *Welded*.

Macbeth was staged in modern dress with the result that might have been expected. *The Making of an Immortal*, by George Moore, proved a delightful satire on the Shakespeare-Bacon question and the great figures of Elizabeth's day, with Sybil Thorndike as the Virgin Queen, Leslie Faber as Bacon, and Charles Laughton as rare Ben Jonson.

New plays of importance by British writers were Drinkwater's *Bird in Hand*, Milne's *The Fourth Wall* (*The Perfect Alibi* in America), *Blackmail*, *A Man with Red Hair*, *Other Men's Wives*; Edgar Wallace's *The Man Who Changed His Name* (acted by Robert Loraine); a piece by Margaret Kennedy and Basil Dean entitled *Come with Me*; *S O S* by Walter Ellis with Sir Gerald du Maurier; two detective stories dramatized as *Alibi* and *The House of the Arrow*;

Young Ideas, by Major Browning; with Ernest Truex; *My Lady's Will*, by Adelaide and Eden Philpotts; *Thunder on the Left*, adapted from Christopher Morley's novel; *A Damsel in Distress*, by Ian Hay and P. G. Wodehouse; and *The Return Journey* by Arnold Bennett.

Three Spanish plays by the Quinteros, translated by Mr. and Mrs. Granville-Barker, were offered during the fall—*Fortunato*, *The Lady from Alfaceque* and *A Hundred Years Ago*. There were also various productions of plays of Ibsen and Strindberg by Mrs. Patrick Campbell, Robert Loraine, and others; likewise dramas by Lord Tennyson and Bernard Shaw. Frederick Lonsdale figured as co-author of a musical comedy, *Lady Mary*, and a first play by E. F. Benson, founded on his own novel, *The Luck of the Vails*, was proffered by Lady Tree.

In Germany, there was evident a tendency to rely greatly for theatrical entertainment on the products of other countries, with America prominent in the list.

In France, Sacha Guitry wrote and produced a drama entitled simply *Lindbergh*, epitomizing the arrival of the Lone Eagle in Paris at the end of his memorable trans-Atlantic flight. It is difficult to escape the suspicion that M. Guitry's prime object was to capitalize the enthusiastic regard in which the young American aviator is held. For the title rôle, a young Frenchman who was once mistaken for Lindbergh in a Paris crowd was located and trained for his stage début.

For further discussion of European plays see sections on the *Drama* under LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE; ITALIAN LITERATURE, etc.

THEOSOPHICAL MOVEMENT, THE. A movement which is traced by its adherents as far back as historical records extend, and which is discerned wherever thought has struggled to be free, wherever living truth has been stressed as opposed to forms and dogmatism, and which was enunciated and restated by Madame Helena Blavatsky in 1875. The fundamental tenets of the philosophy of Theosophy are (1) the existence of that which is beyond the range and reach of human thought, in which we live and move and have our being,—the source, the container, and the goal of all manifestation; (2) the universal basic law of periodicity, under which one universe succeeds another as day follows night, and rebirth, death; and (3) the fact of universal brotherhood, all being the same in essence and all pursuing the same evolutionary journey toward the attainment of human perfection, exemplified in such beings as Krishna, Buddha, and Christ; each man's character, opportunities, and environment at any given stage being the result of his own past thoughts, desires, and acts. The Theosophical Movement showed considerable activity during 1928, especially in a marked awakening of interest in Theosophy in England, Holland, and France. In Paris during the year, a large and rapidly growing lodge of students was formed who were devoted to the original teachings of Theosophy, distinguished from the many departures therefrom, and William Q. Judge's *Echoes from the Orient* and *Life on the Path* were translated into French. An important publication of the year was *The Real H. P. Blavatsky: A Study in Theosophy and a Memoir of a Great Soul* (London) by William Kingsland.

THEOSOPHICAL SOCIETY, AMERICAN. The American division of the Theosophical Society, a world-wide organization founded in 1875 by Mme. Helena P. Blavatsky and Col. Henry S. Olcott. World headquarters were later established at Adyar, India, near Madras, where the society owns a tract of three hundred acres on the Adyar River, with many beautiful buildings erected to house its extensive library of occult works, its printing plant and business offices, also an auditorium and residences. Since 1875 the organization has spread until in 1928 branches existed in forty-two nations, on five continents. There are the Canadian, Mexican, Cuban, Porto Rican, and United States Theosophical Societies, each taking its local designation from the region in which it exists. The American Theosophical Society was formerly known as the American Section of the Theosophical Society, and in 1928 had 257 local lodges throughout the nation.

The objects of the Society are to form a nucleus of the universal brotherhood of humanity, without distinction of race, creed, sex, caste, or color; to encourage the study of comparative religion, philosophy, and science; and to investigate the unexplained laws of nature and the powers latent in man. It is composed of students, who are united by their approval of the society, by their wish to remove antagonisms due to religion, and to draw together men of good will whatsoever their religious opinions, and by their desire to study religious truths and to share the results of their studies with others. The headquarters were moved to Wheaton, Ill., in 1927, where there has been erected a spacious building on ten acres of ground. This land eventually was to be built up into a beautiful park. The president of the Society for 1928 was L. W. Rogers, lecturer and author of *Elementary Theosophy*, *Dreams and Premonitions*, *Reincarnation*, *The Forces We Generate*, and *Earth's Next Civilization*.

THEREMIN, LEON. See MUSIC.

THOMPSON, EDWARD RAYMOND (E. T. RAYMOND). English editor and author, died at London, April 10. He was fifty-six years old. He received a private education and after working as a journalist at Brighton, Leeds, and elsewhere, joined the staff of the *Star*, of London, in 1897. In 1898 he went to Japan to the *Japan Mail*, of Tokyo. He remained with that paper until 1900, and from 1900 to 1902 was editor of the *Japan Gazette* of Yokohama. In 1904 he returned the England as night editor of the *Daily Mirror*, of London, and he subsequently served on the staffs of the *Standard*, the *Outlook*, and the *Evening Standard*; from 1916 until his death he was editor-in-chief and leader writer of the last-named publication. In 1919 appeared his first book, *Uncensored Celebrities*, in which he displayed a talent for unconventional pen portraiture, especially of political figures. The book was followed by others in the same vein: *All and Sundry* (1919); *Mr. Balfour* (1920); *Portraits of the Nineties* (1921); *Mr. Lloyd George* (1922); *The Man of Promise* (Lord Rosebery, 1923); *Disraeli, the Alien Patriot* (1925); and *Portraits of the New Century* (1927). He published his books under the pen name "E. T. Raymond."

THOMPSON, JAMES WALTER. American advertising specialist, died at New York, October 16. Born in 1847, he at first was connected with the advertising office of William J. Carlton

in 1864, and several years later he acquired control of the business. He was so successful in interesting merchants in the extensive use of advertising media, that he eventually secured a practical monopoly of the sale of magazine advertising. Through his realistic and interesting pictures, and nation-wide selling campaigns, he gradually overcame the aversion of magazine proprietors and editors to what had been considered vulgar commercial propaganda. He also instituted the syndicating of advertising material by acquiring advertising rights from various newspaper chains throughout the country, and distributing in wholesale fashion the appeals of his clients. Before he retired, in 1916, he had developed the reputation of a number of commodities so that the purchasing public had become widely familiar with them, and magazine editors sought the advantage of dealing with his organization.

THORNYCROFT', SIR JOHN ISAAC. English naval architect, died at Bembridge, Isle of Wight, England, June 28. He was born at Rome, Feb. 1, 1843; his father, mother, and maternal grandfather were all sculptors of distinction, and his brother, William Hamo Thornycroft (1850-1925), was especially noted in that profession. He was educated at a private school and at Glasgow University. He early showed an aptitude for mechanics, and at 18 built a steam launch, *Nautilus*, which was the fastest boat of its kind on the Thames. Still earlier he had constructed a small model steamboat which contained several improvements on existing vessels; he later embodied the innovations in torpedo boats which he built for the British Government. He opened a shipyard at Chiswick in 1866, and achieved remarkable success as a builder of torpedo boats. Among his improvements were the closed stoke-hole and fan, a special indicator, a water-tube boiler, and the turbine propeller. Early in the World War he conceived the idea of building small torpedo boats of high speed and such shallow draft that they could pass safely over mine fields. More than 100 such boats were constructed for the British Navy, and gave good accounts of themselves at Zeebrugge, Ostend, and elsewhere. The Thornycroft works constructed commercial vessels as well as warships, and Sir John (who was knighted by King Edward in 1902) established automobile works also, and invented sugar-making machinery. Glasgow University conferred on him the honorary degree of LL.D. in 1901. He was elected a fellow of the Royal Society in 1893 and was a member of the Institution of Naval Architects and of the Institution of Civil Engineers.

THURIN'GIA. A federated state of the German Republic, created at the end of 1919; comprising the following states of the former German Empire: Eisenach, Gotha, Reuss, Saxe-Altenburg, Saxe-Meiningen, and Saxe-Weimar, with Schwartzburg-Rudolstadt and Schwartzburg-Sondershausen. Area, 4536 square miles; population, according to the census of 1925, 1,609,300. Capital, Weimar, with a population in 1925, of 45,957. Other large towns with their populations at that date were, Gera, 81,402; Jena, 52,649; Gotha, 45,780; Eisenach, 43,385. The arable land is estimated at 44 per cent of the total area. The acreage and production of the principal crops in 1926 were: Wheat, 153,791 acres, 97,702 tons; rye, 183,808 acres, 103,370 tons; oats, 205,907 acres, 145,755 tons; po-

tatoes, 162,302 acres, 590,124 tons. The government is under a diet, which acts through a state council. In the elections held in January, 1927, the following parties were returned: Conservative bloc, 19; Socialists, 18, Communists, 8; other parties, 6. The executive authority is entrusted to the president of the state council. The President of this council in 1928 was Dr. Leuthusser.

TIBET, ti-bët' or tib'et. A region extending eastward from the Pamirs to the border of China; between the Himalaya and Kwenlun Mountains; nominally under the suzerainty of China. Area, estimated at 463,200 square miles; population, variously given, at 1,500,000 to 6,000,000, the probable figure being about 2,000,000. Capital, Lhasa, with a population of 15,000 to 20,000. Lamaism is the prevailing religion. The chief pursuits are pastoral and the animals raised include sheep, yak, buffaloes, pigs, and camels. Some agriculture is carried on, the products including barley and other cereals, pulse, and vegetables. There is considerable activity in the industries of wool spinning, weaving, and knitting. Of the minerals, gold, borax, and salt are mined to some extent. Trade is chiefly with India and China.

TIERNEY, RICHARD HENRY. American Roman Catholic clergyman and editor, died at New York, February 10. He was born at New York City, Sept. 2, 1872. He was graduated from St. Francis Xavier College, New York, in 1892, and entered the Society of Jesus at Frederick, Md., in the same year. He studied for seven years at Frederick and at Woodstock College, Maryland, and then taught for five years, two at Gonzaga College, Washington, D. C., and three at Holy Cross College, Worcester, Mass. In 1904 he returned to Woodstock for his theological courses and after his ordination in 1907 he devoted two more years to theology at Woodstock; these were followed by the third year of his novitiate at Linz, Austria. On his return to the United States in 1910, Father Tierney taught philosophy at Woodstock until, in 1913, he became a member of the editorial staff of *America* (a national Roman Catholic weekly). In March, 1914, he became editor-in-chief, and he held that position until 1925, when he was incapacitated by illness from all further work. Besides editing *America*, he was editor of *Catholic Mind* and a contributor to the *American Catholic Quarterly*, the *American Ecclesiastical Review*, and other publications, and he lectured on the psychology of education. He was prominent in the work of various Roman Catholic educational, historical, and religious associations.

TIN. In 1928 there were substantial increases in both the production and consumption of tin throughout the world. It was estimated that with the increased production the output for the year amounted to nearly 136,000 tons, or approximately 15 per cent more than in 1927, when the U. S. Bureau of Mines estimated the world's output at 158,769 long tons. The Federated Malay States are the leading sources of the world's tin, exporting in 1927 52,180 tons, with 1988 tons from the Unfederated Malay States. In 1928 it was estimated that the Federated Malay States would show an increase of approximately 20 per cent, or about 10,000 tons, with a slight decline in the output of the Dutch East Indies whose production in 1927 was stated at

33,935 tons. In Bolivia, which in 1927 produced 36,707 tons, there was a substantial increase estimated at about 12 per cent due in large measure to the development of the Patiño Mines and Enterprises Company. The year's shipments were estimated at about 39,000 tons and Bolivia for 1928 again was able to show a record production. Nigeria, which in 1927 had a production of 8056 tons, was expected to show an increase of 10 to 11 per cent. In England, Cornwall, which in 1927 produced 2593 tons, maintained about the same rate in 1928 with conditions more stabilized and prospective extensions of the tin-mining activities being considered. The total visible supply of tin on Dec. 31, 1927, was given at 15,474 long tons and on Dec. 31, 1928, at 23,605 long tons. The total supplies during the year 1928 were estimated at 135,960 tons, as against 118,134 tons in 1927. The total deliveries for 1928 were 127,867 tons, as against 118,841 tons in 1927. The prices in New York ranged from a maximum of 50 cents at the close with a lower point occurring in June and July. In 1927 the average was 64.37 cents.

Tin imports into the United States in 1928 amounted to 130 tons of ore with tin contents which was valued at \$69,227, as compared with 122 tons valued at \$79,089 in 1927; and 174,653,760 pounds of tin in such forms as bars, blocks, and pigs, valued at \$86,983,174, as compared with 159,357,110 pounds valued at \$100,865,205 imported in 1927. The chief sources of the latter products were as follows: British Malaya, 117,132,573 pounds valued at \$58,334,442; the United Kingdom, 27,322,536 pounds valued at \$13,288,565; The Netherlands, 16,022,782 pounds valued at \$8,229,377; Hong Kong, 4,868,656 pounds valued at \$2,487,924; Australia, 1,716,422 pounds valued at \$845,978; Netherland East Indies, 756,212 pounds valued at \$401,264; and other countries, 6,834,670 pounds valued at \$3,395,624.

TIMBER. See FORESTRY.

TIROL. See TYROL.

TOBACCO. The 1928 crop in the United States was grown on a considerably increased area compared with the 1927. The acreage was 1,912,100, only twice exceeded. The production of 1,373,501,000 pounds was likewise larger than in 1927, although the per-acre yield was smaller, and the total output was about 2 per cent above the average for 1922-26. The increase in production affected nearly all types, being especially pronounced in Burley, the dark tobaccos of western Kentucky and Tennessee, and the cigar types. Flue-cured tobaccos showed an increase of about 1 per cent, while Virginia dark-fired and Maryland export showed decreases. Lower prices gave the crop a less farm value than in 1927 or most recent years. North Carolina led in production, with 475,239,000 pounds, followed in order by Kentucky, 306,000,000; Virginia, 111,600,000; Tennessee, 88,459,000; Georgia, 84,387,000; South Carolina, 82,288,000; Pennsylvania, 49,580,000; Wisconsin, 49,025,000; Ohio, 33,440,000; Connecticut, 29,750,000; and Maryland, 21,700,000 pounds.

In November, 1928, the International Institute of Agriculture reported the world tobacco production, with statistics available, at 1,809,276,000 pounds, as compared with 1,474,597,000 pounds in 1927. The United States was by far the largest producer, growing fully three-fourths of the world crop. It was followed by Japan, with

an estimated production of 147,159,000 pounds; Bulgaria, about 43,000,000; and Canada, about 41,000,000.

Receipts from internal revenue taxes on tobacco in the United States for the fiscal year 1928, as reported by the Commissioner of Internal Revenue, reached a new high mark of \$396,450,041.03, an increase of \$20,279,835.99 over the previous year. The amount collected from this source in 1928 exceeded the total internal revenue receipts from all sources in any year prior to 1915. Collections on small cigarettes comprised 76.11 per cent of the total tobacco taxes, the amount showing a record figure of \$301,752,588.34, an increase of \$22,824,026.53 compared with the previous year. Another record was established by the collection of \$7,461,354.90 in taxes on snuff, an increase of \$553,090.26 compared with the previous year. The steady increase in the consumption of snuff is unaccounted for, unless it has to some extent supplanted chewing tobacco. The receipts from taxes on chewing and smoking tobacco amounted to \$62,774,542.43, a decrease of nearly \$2,300,000. Collections from taxes on large cigars amounted to \$22,879,374.93, also representing a considerable decrease. Nearly 90 per cent of the total tobacco tax receipts were collected in North Carolina, Virginia, New York, Pennsylvania, New Jersey, Ohio, and California, in the order named, North Carolina contributing nearly 60 per cent.

A change in tobacco habits during the World War had led to the replacement of chewing and smoking tobacco by cigarettes. The Bureau of Internal Revenue reported that in the calendar year 1927 nearly one hundred billion cigarettes were manufactured weighing three pounds or less per thousand, an increase of about 8 per cent over the preceding year. The per-capita tax paid on account of tobacco had steadily increased in 10 years. For the fiscal year 1928, it amounted to \$3.30, compared with \$3.17 in 1927, and a little less than \$3 in 1925. Of the amount for 1928, \$2.51 was on account of cigarettes.

Cigarette smoking had shown a large increase the world over. In England it was steadily replacing the pipe, and in Germany a marked increase in consumption had taken place. In England an imperial economic committee, which had been making a survey of the situation, estimates that pipe tobacco did not form more than 35 per cent of the total tobacco consumption of the British Empire. In India the annual consumption of cigarettes was about six and one-half billion, as compared with less than one billion before the War.

Exports of American tobacco were expected to exceed 500,000,000 pounds in 1928, the largest amount for any year since 1924. The exports of flue-cured tobacco increased 14 per cent in 1928 over those of the preceding year. The United Kingdom and China were the leading markets for this type of tobacco; and the exports of cigarettes to China increased. The export of American flue-cured tobacco was also favored by the increased use of cigarettes and the limited foreign production of similar tobacco. Canada exported to Great Britain nearly 7,000,000 pounds of tobacco, compared with about 175,000 pounds in 1921.

For tobacco-plant diseases, see BOTANY, under *Plant Diseases*.

TOBAGO. A West Indian island, included administratively in Trinidad. See TRINIDAD.

TOGO, tō'gō, or TOGOLAND. A former German

protectorate in West Africa; after the War, divided between Great Britain and France; situated between Dahomey and the Gold Coast. Total area, 33,700 square miles; total population estimated at 762,208, of whom 245 were Europeans. Hamitic tribes make up the population of the north, while in the south the chief stock is the Ewe. To France has been allotted about two-thirds of the total area; namely, 21,200 square miles, including all the coast. The British part bordering the Gold Coast has an area of 12,600 square miles, with a population, according to the census of 1921, of 188,265. The soil is generally fertile and the forests are extensive; the mineral resources are rich but undeveloped. Iron is reported to be especially abundant. Statistics for exports, imports, revenue, and expenditure are now included in the general totals of the Gold Coast. The Governor of the Gold Coast is the administrator of the territory.

In French Togo, the natives engage in agriculture and some manufacturing. The chief agricultural products are corn, yams, plantains, peanuts, etc. The forest products are of some value, but the chief trade is in palm oil, palm kernels, cacao, copra, cotton, and rubber. The native industries include weaving, straw plaiting, wood cutting, pottery, etc. In certain districts the natives engage in iron smelting. In 1926 the imports were valued at 99,047,677 francs; exports, 70,374,154 francs. The budget for 1927 balanced at 33,585,000 francs. From Lome, the seat of the Government, there are railway connections with Anecho, Palime, and Atakpame, with a total length of 204 miles. In 1926, 357 vessels cleared from the two ports of Lome and Anecho.

TOLEDO, OHIO. See MUNICIPAL GOVERNMENT.

TOLEDO, UNIVERSITY OF THE CITY OF. An institution of higher education at Toledo, Ohio, founded in 1872. The enrollment for the autumn of 1928 totaled 2034, including 995 day students, and 1039 late afternoon and evening students. There were 256 students registered for the summer session. The faculty had 84 members. The annual budget of the university amounted to \$250,470, and the library contained 21,000 volumes. At the election on November 6, 1928, a bond issue of \$2,850,000 was voted for the university, of which \$2,000,000 was to be used for buildings, \$500,000 for equipment, and \$350,000 for new location. It was planned that the university would occupy its new building by the autumn term of 1930. President, Henry John Doermann, A.M., Ed.D.

TOLL BRIDGES. See BRIDGES.

TOLSTOY, LEO, ANNIVERSARY. See CELEBRATIONS.

TONGA or FRIENDLY ISLANDS. Three groups of islands, together with small, outlying islands, to the east of Fiji in the Pacific Ocean, between 15° and 23° 30' S. latitude and 173° and 177° W. Longitude: since May 19, 1900, a protectorate of Great Britain. Total area, approximately 385 square miles; population, according to the census of 1921, 23,759 Tongans; 370 other Pacific islanders; 571 Europeans; and 235 half-castes. Estimated population in 1926, 27,048. The natives are Christians, about 16,000 belonging to the Free Church of Tonga. At the end of 1926 there were 111 public primary schools, with 4529 pupils enrolled. Tonga College had eight teachers and 170 students at

the end of 1926. Native produce consists almost entirely of copra. Revenue in 1925-26, £91,696; expenditure £68,759. In 1926 the imports were £227,882 and the exports £255,156. The Government is under the High Commissioner of the Western Pacific, who acts by the advice of the local ruler and native chiefs. Queen in 1928, Salote, who succeeded Apr. 12, 1918; High Commissioner for the Western Pacific, Sir Eyre Hutson.

TONGKING, tōn'ken. A French protectorate, constituting the northern chief division of the colony of French Indo-China, south of the Chinese provinces of Kwangsi and Yunnan. Area, 40,530 square miles; population in 1926, 7,401,912, of whom 9143 were Europeans, exclusive of military forces. The chief city is Hanoi, which is the capital of French Indo-China, with a population of 103,235 in 1926. The chief crop is rice, although there is also a large annual production of raw silk. The mineral resources include limestone quarries, calamine and tin mines, as well as rich anthracite coal beds. Among the principal imports are metal tools and machinery, yarns, and cotton. The chief exports are rice, corn, and animal products. Imports in 1926, 1,700,758,000 francs; exports 1,316,401,000 francs. The local budget for 1927 balanced at 18,017,180 piastres. The Government is under a resident superior, who in turn is under the Government-General of French Indo-China.

TORNADOES. See METEOROLOGY.

TORONTO, UNIVERSITY OF. An institution of higher education at Toronto, Canada, founded in 1827 and supported by the provincial government. The 1928 autumn enrollment was 5961, distributed as follows: Arts, 3124; medicine, 748; applied science and engineering, 599; household science, 169; education, 291; forestry, 66; music, 26; graduate students, 371; dentistry, 251; social service, 85; public health nursing, 226; occupational therapy, 54; graduate nurses, 21. The faculty numbered 659. The total expenditure for the year 1927-28 for salaries and maintenance was \$2,396,212. The library contained 220,349 volumes and 76,876 pamphlets. Among the gifts received during the year was a grant of \$250,000 from the Rockefeller Foundation for the school of hygiene; and other smaller contributions which brought the total gifts received to \$337,915. At a special convocation held on November 7, the University of Toronto conferred on Sir Austen Chamberlain, Secretary of State for Foreign Affairs in the British Government, the honorary degree of doctor of laws; and upon Paul Claudel, French Ambassador to the United States, the honorary degree of doctor of letters. President, Sir Robert A. Falconer, K.C.M.G., D.Litt., LL.D., D.D., D.C.L.

TORPEDO BOAT. See NAVAL PROGRESS.

TORREY, REUBEN AROHER. American clergyman and evangelist, died at Asheville, N. C., October 25. Born at Hoboken, N. J., Jan. 28, 1856, he was graduated from Yale in 1875, and from the Yale theological seminary in 1878, in which year he was ordained into the Congregational ministry. After serving as minister of a church at Garrettsville, Ohio, he studied theology at Leipzig and Erlangen, 1882-83. On his return to the United States, he was assigned to a church at Minneapolis, where, having become superintendent of the city missions, he later

organized an independent People's Church. Becoming associated with Dwight L. Moody, the evangelist, Mr. Torrey served as superintendent of the Moody Bible Institute, 1889-1908, and after accompanying Mr. Moody to his revival meetings throughout the country, he later preached independently, making many converts. He preached in Europe, Australia, and the Orient, 1902-03, and in England, 1903-05. He traveled continually, revisiting Europe and the Far East and holding religious meetings in the United States and Canada. Besides his evangelistic work, Mr. Torrey served as Dean of the Bible Institute of Los Angeles, 1912-24, and as pastor of the Church of the Open Door, of that city, 1915-24. He became a special lecturer at the Moody Bible Institute of Chicago in 1927. He wrote more than fifty religious and evangelistic books, in the interest of general morals and explaining the Bible, many of which were translated into several languages.

TOWNE, CHARLES ARNETTE. American lawyer and former member of Congress, died at Tucson, Ariz., October 22. Born in Oakland County, Mich., Nov. 21, 1858, he attended the University of Michigan and was admitted to the Michigan bar in 1886. Moving to Duluth, Minn., in 1890, he was elected as a Republican to the United States House of Representatives, serving 1895-97. Being ardently in favor of bimetalism, he left the Republican party in 1896, advocating the election of W. S. Bryan and acted as national chairman of the Silver Republican party, 1897-1901. He was the unsuccessful Fusion candidate for the United States Senate in 1899. Both the People's party and the Silver Republican party nominated him for vice president in the national election of 1900, but he refused to accept either candidacy. Governor Lind appointed him to the United States Senate on December 5 of that year, where he served until Jan. 28, 1901, filling the vacancy caused by the death of C. K. Davis. His interest in the Texas oil industry brought him to New York City, where he engaged in the practice of law, and he was elected to Congress as a Democrat in 1904, serving 1905-07. He was on a speaking tour for the Democratic party in the national campaign of 1928 at the time of his death.

TOWN PLANNING. See CITY PLANNING.

TRACHOMA, trā-kō'mā. More as a medical curiosity than for any scientific worth is the information that workmen who have developed trachoma have made claims for accident insurance under the impression that the malady had been due to the entrance of sand, dust, etc. into the eyes. There is a certain parallelism between the disease trachoma and the effects of severe or persistent mechanical irritation of the eyes; so that at times it is difficult to make a distinction. To complicate matters, it is known that simulators have produced an artificial imitation of trachoma. Among soldiers it has been well known that the application of powdered ipecac or emetin is able to produce a trachoma-like affection which can deceive the military surgeon. Dr. Steiner, a Swiss who had spent years in Java and was sufficiently familiar with trachoma, admits in the *Schweizerische medicinische Wochenschrift* for November 3, 1928, that the borderline between this disease and actual mechanical injury or irritation is puzzling. Injury or irritation may of course

complicate active trachoma or healed cases may be reactivated. Workers who have made claims thus far have been mostly masons. Ordinary granulosis, the granulated eyes of the laity, is often a complicating feature. It is conceivable that in few conditions is expert treatment more in request or more difficult.

TRACK AND FIELD ATHLETICS. See ATHLETICS.

TRACY, trā'si, JAMES MADISON. An American organist, died in Denver, Colo., September 3. Born at Bath, N. H., Jan. 27, 1837; he studied with Carl Hauser in Boston, entered the Leipzig Conservatory in 1858, and in 1860-61 completed his musical education under Liszt in Weimar. From 1868-84 he resided in Boston, teaching at the Boston Music School. After that he taught in several institutions in various cities until 1900, when he settled permanently in Denver, where he established the Liszt School of Music, of which he was director till shortly before his death. He was the author of *Theory and Rudimental Harmony* (1878) and wrote several technical and instructive works for the piano.

TRACY, LOUIS. English author and journalist, died near Ashford, Kent, August 13. He was born at Liverpool, March 18, 1863, and was educated at private schools in Yorkshire and in France. He started journalistic work on the *Northern Echo*, at Darlington, in 1884, and two years later he moved to Cardiff. In 1889 he went to Allahabad, India, and remained there until 1893, when, returning to England, he bought a share in the *Evening News*. In 1895 he went to the United States, traveling extensively in America, and visiting India, until 1900. During the World War he wrote and lectured on international affairs, particularly in the United States. He also served in the Whitty District North Riding Regiment of Volunteers, becoming a sub-commander in October, 1915, and he became a member of the headquarters staff of the British War Mission in the United States on Sept. 13, 1917. He was associated with the British Foreign Office for a short time in July, 1919, and two years later he came to the United States to collect funds for the restoration of Westminster Abbey. He was, at that time, on the editorial staffs of the *Times* and the *Daily Mail*. In 1920 he was created a commander of the Order of the British Empire. In addition to his journalistic activities, he wrote many novels and stories, including: *The Final War* (1896); *Rainbow Island* (1904); *The Pillar of Light* (1905); *The Wheel o' Fortune* (1907); *The Red Year* (1908); *The Stowaway* (1910); *The Silent House* (1911); *The Only Way*. (1913); *Diana of the Moors* (1914); *His Unknown Wife* (1915); *The Day of Wrath* (1916); *The Postmaster's Daughter* (1917); *The Park Lane Mystery* (1923); *The Turning Point* (1924); *The Passing of Charles Lanson* (1925); *The Black Cat* (1925); *The Cleave Mystery* (1925); *The Law of the Talon* (1926); *The Third Miracle* (1927), and *The Woman in the Case* (1927).

TRADE FAIRS. See EXPOSITIONS.

TRADE-UNIONISM. It is a familiar enough fact to close students of labor history that the establishment of powerful unions in certain industries has advanced rather than retarded industrial progress. It is no idle boast that one reads in the following statement of Sidney Hillman, president of the Amalgamated Clothing

Workers' of America: "The labor cost in our industry has gone up much less than that in any other industry. By working out our problems with the employers, we have produced efficient methods of work. . . . I can say that there is no important change in the manufacturing process in the shop for which the union is not at least 50 per cent responsible." The *Monthly*

hood of Railway Carmen of America, the United Brotherhood of Carpenters and Joiners, all of which had more than 10,000 members.

JAPAN. For the year 1927 the Japanese Bureau of Social Affairs reported a total membership of 309,493 trade-unionists in 505 unions. The accompanying table gives the membership in these unions by industries and sex.

NUMBER AND MEMBERSHIP OF TRADE UNIONS IN JAPAN AT END OF 1927

Industrial group	Number of unions	Membership		Total
		Male	Female	
Machine and tools.....	72	96,188	994	97,182
Chemical	57	7,904	1,208	9,112
Textile	19	7,695	7,857	15,552
Food and drink	13	4,580	699	5,279
Miscellaneous	86	14,260	801	15,061
Mining	11	11,196	2	11,198
Gas and electricity	10	8,819	6	8,825
Transport	61	115,477	709	116,186
Communications	1	871	.....	871
Civil engineering and construction	26	1,560	.....	2,560
Others	149	26,919	748	27,667
Total	505	296,469	13,024	309,493

Labor Review has collected some curious examples of the extent to which the union's co-operation with the employers of its members is willing to go. When a contracting firm was threatening to go out of business because it could not meet the low prices being set by the manufacturer, the union stepped in, brought the disputants together, succeeded in having the manufacturer raise his prices and thus kept the shop open. In another case, where 3000 workers were involved, a firm of manufacturers was about to close its shops because of inefficiencies in management and too keen competition. The union made an investigation, recommended the needed adjustments, and saved the workers their jobs though the conditions were for the time being disadvantageous to them. The union has even gone so far as to offer loans to employers who were being threatened with liquidation. In three such cases where the union offered its aid, the number of employees was 1000 persons or more in each instance. One firm did not avail itself of the offers of the union's credit, one did and paid off the loan in a few months, while the third accepted the union's offer and was still paying off the money advanced. The two firms that were saved by the union later employed between them 4000 union members.

CANADA. For the year 1927 there were 2604 branches of labor organizations in Canada with a total membership of 290,282. Of this total, 140,195 persons were affiliated with the Trades and Labor Congress of Canada and 46,279 persons were affiliated with the All-Canadian Congress of Labor. International craft unions accounted for 180,755 of the 1927 membership, the One Big Union, for 19,245 members, the Industrial Workers of the World, for 4400 members, the Canadian Central Labor Organizations, for 48,435 members, independent units for 12,447 members, and the national and Catholic unions, for 25,000 members. The total gain in membership over the previous year had been 15,678 persons and all the units but the I. W. W. had gained. There were 85 international craft unions in the country, the more important being the United Mine Workers of America, the International Association of Machinists, the Brotherhood of Railroad Trainmen, the Brother-

hood of Railway Carmen of America, the United Brotherhood of Carpenters and Joiners, all of which had more than 10,000 members.

GREAT BRITAIN. The following figures for trade-union membership in Great Britain and Northern Ireland were compiled by the Ministry of Labor and include all unions made up of skilled, unskilled, professional, and clerical workers. It will be noticed that the peak year was 1920 and that the years following witnessed a continuous decline. It will be observed, however, that the 1926 membership of 5,208,000 was 25 per cent greater than 1913's figure. The report points out that the decreases occurred in the following industries: mining and quarrying, 126,000; road transport and dock workers, 40,000; railway workers, 40,000; metal trades, 20,000.

MEMBERSHIP OF TRADE-UNIONS IN GREAT BRITAIN AND NORTHERN IRELAND, AT END OF EACH YEAR, 1913 TO 1926

Year	Membership	Year	Membership
1913	4,135,000	1920	8,337,000
1914	4,145,000	1921	6,621,000
1915	4,359,000	1922	5,616,000
1916	4,644,000	1923	5,413,000
1917	5,499,000	1924	5,534,000
1918	6,533,000	1925	5,497,000
1919	7,926,000	1926	5,208,000

BRITISH TRADES-UNION CONGRESS. The 1928 congress, which was held at Swansea the week of September 3, showed a continued swing to the right and a desire to part company with the point of view expressed by Mr. Cook that trade-union action might be used as a revolutionary lever. The upshot of the congress appeared to be that trade-unionism was going to "use its power to promote and guide the scientific reorganization of industry as well as to obtain material advantages from that reorganization." It was reported that the aggregate membership of the affiliated unions was 3,874,800, a decline from 1927 of 289,000. With the expulsion of the National Union of Seamen, which the Congress proceeded to do, there was another loss of 60,000 members. The congress was marked by disorders in which the Communist elements participated.

TRADE UNIONS. See WELFARE WORK; UNEMPLOYMENT.

TRAFFIC ORDINANCE. See AUTOMOBILES.

TRANSJORDANIA. A territory of Asia

Minor inhabited by Arabs, of which the territorial and political status was still unsettled in 1928, although nominally under the mandate of Palestine; situated to the east of the Jordan and north of the Arab dominions of the Hedjaz and Nejd. The area is uncertain because of the unsettled boundaries; the population has been estimated at 260,000, of whom 220,000 are Arab Moslems. About half the population are nomads, the rest living in villages. A large part of the territory is desert. In the arable regions the principal pursuits are agriculture and stock raising. The estimated revenue for 1927-28 was £227,000 and the grant-in-aid from the British Government £68,000. In 1923 the British Government recognized the local Arab rule on condition that it should conform to constitutional principles and receive the approval of the League of Nations. Up to 1928 this approval had not been obtained. The general responsibility for Transjordan rests with the High Commissioner for Palestine, who is represented in the country by an agent. The Emir in 1928 was Abdullah Ibn Hussein.

TRANSMISSION LINES. See **ELECTRIC POWER TRANSMISSION.**

TRANSPORTATION. See **RAILWAYS.**

TRANSVAAL. See **SOUTH AFRICA, UNION OF.**

TRAVEL. See **LITERATURE, ENGLISH AND AMERICAN.**

TREATIES. See **ARBITRATION, INTERNATIONAL.**

TREE DISEASES. See **BOTANY, under Plant Diseases.**

TREES. See **FORESTRY.**

TREPOV, tráp'póf, PRINCE ALEXANDER FEODOROVITCH. Former premier of Russia, died suddenly at Nice, France, November 10, at the age of sixty-six. He served in the army when a young man, resigning to enter the Ministry of the Interior. Being interested in rural education, he became associated with the Zemstvo of Pereyaslav, and represented that organization at the Zemstvo of Poltava. He undertook a position in the State Chancellery in 1897 and was appointed assistant secretary to the Imperial Council two years later. When Czar Nicholas II was compelled to grant representation to the people in the form of the "Gosudarstvennaia Duma," 1906, Prince Alexander was selected to aid in the establishment of the new council. After having been sent to western Europe by the Czar in 1907, to study parliamentary systems, he was appointed senator in the same year. He was made a member of the Imperial Council in 1914, and although he joined the reactionary group, he did not actively support imperialistic measures. As minister of communications, in 1915, Prince Alexander reorganized the railroad system, and instituted an extensive building programme. He was made premier in November, 1916, to succeed Boris Stürmer, and continued his reactionary policies. During Prince Alexander's repressive ministry, the war forces were ineffectually directed, and popular discontent increased rapidly. He resigned on Jan. 9, 1917, and was replaced by Prince N. Golitzin. After the Revolution of 1918, Prince Alexander worked for the restoration of the monarchy.

TREVELYAN, tre-vél'yan, SIR GEORGE OTTO. English statesman and historian, died at Wallington, Northumberland, August 17. He was born at Rothley Temple, Leicestershire, July

20, 1838, the nephew of Lord Macaulay, and was graduated with honors from Harrow in 1857, and from Trinity College, Cambridge, in 1861. He then joined the East Indian Civil Service, under his father, Sir Charles Edward Trevelyan, who was at that time Governor of Madras. On his return to England he was elected as a Liberal to the House of Commons from Tynemouth in 1865, being reelected from the Hawick Burghs in the Liberal victory of 1868, when Gladstone succeeded Disraeli as Prime Minister. Trevelyan was appointed Civil Lord of the Admiralty in the same year. During his long service in Parliament he was an influential speaker, leading in the abolition of purchase in the Army and in the extension of household suffrage.

Sir George resigned his post on the Admiralty in 1870, because he disagreed with Gladstone on the Education Bill, but he retained his place in Parliament when the Liberal party was defeated four years later, serving continuously from the Hawick Burghs until 1887, and from the Bridgeton Division of Glasgow for the following ten years. On Gladstone's return to office in 1880, he appointed Trevelyan Secretary of the Admiralty, and two years later sent him for an arduous year to Ireland, as Chief Secretary of the Lord Lieutenant, taking the place of Lord Frederick Cavendish, who had been assassinated.

Soon after Trevelyan's return to England, he was made Chancellor of the Duchy of Lancaster in 1884, and given a place in the cabinet. Gladstone, regaining the premiership in February, 1886, after his defeat by Lord Salisbury the previous year, appointed Trevelyan Secretary for Scotland, but the latter resigned shortly afterward, being among those Liberals who opposed the separate Irish Parliament provided for in the Home Rule Bill. After Gladstone's third defeat, and his return to the ministry in 1892, he again placed Trevelyan in his cabinet, and appointed him Secretary for Scotland, a position which he held through Lord Rosebury's leadership, 1894-95. He retired from public life during Lord Salisbury's government, in 1897.

As a historian, Trevelyan made for himself a reputation even more lasting than that achieved in public life. He wrote several notable biographies and histories, the first being, *Life and Letters of Lord Macaulay* (1876), which ranks with the best English biographies. His next book, *The Early History of Charles James Fox* (1880) achieved a well-deserved and permanent popularity through its lively presentation of eighteenth-century society. While preparing a second book on Fox, Trevelyan became absorbed in the American War of Independence and wrote a four-volume history, *The American Revolution* (1909), considered, both in England and America, as one of the most comprehensive extant studies of the effect of the Revolution on England, Europe, and America. He completed the series with *George the III and Charles Fox*, two volumes (1912-14). His less important books are fiction and include: *The Ladies in Parliament*, and *Horace at the University of Athens*, which he wrote while still at Cambridge, and *The Competition Wallah* (1864); and *Cannepore* (1865).

TRICKETT, WILLIAM. American educator, died at Carlisle, Pa., August 1. He was born at Leicester, England, Jan. 9, 1840, and was taken

to the United States when he was an infant. He was graduated from a Philadelphia, Pa., high school and became connected with the Philadelphia Methodist Episcopal Conference. He preached in Pennsylvania, Maryland, and Delaware, but turned from the pulpit for an academic career. He studied at Dickinson College, graduating in 1868. He was admitted to the Pennsylvania bar in 1876. He was principal of the Dickinson, Pa., grammar school, 1868-69; then from 1869 until his death he was connected with Dickinson College, first as adjunct professor of philosophy (1869-71), then as professor of modern languages (1874-75) and finally, from 1890, as professor of law and dean of the law school, which he organized. De Pauw University conferred on him the degree of LL.D. in 1890. Dr. Trickett was an acknowledged authority on the property law of Pennsylvania, and wrote several books on the subject, as well as others on different branches of the law.

TRIESTE, trĕ-ĕst. A former crownland of Austria; occupied by Italy after the War, and retained by Italy under the peace settlement; including the port of Trieste and surrounding regions. Area, 37 square miles; population, at the census of Dec. 1, 1921, 238,655; estimated Jan. 1, 1926, 242,059.

TRINIDAD. A West Indian island north of the mouth of the Orinoco River, constituting, with Tobago, a British colony. Area of Trinidad, 1862 square miles; of Tobago, 114; total population, according to the census of 1921, 365,913; estimated at the end of 1926, 387,470. Capital, Port of Spain, with a population in 1926 of 65,016. The white population is chiefly made up of French, British, Spanish, and Portuguese, while the majority of the natives are West Indians of African descent. East Indians in 1926 were estimated at 126,175. English is the prevailing language. In 1926 the movement of population was: Births, 12,349; deaths, 8496; marriages, 1651. In the same year there were 289 elementary schools, with an enrollment of 57,983 pupils. About 312,355 acres were under cultivation in 1926. A celebrated feature is the asphalt lake, the revenue from which in 1926 was \$88,303. The petroleum industry is of prime importance, the output in 1927 being 5,380,464 barrels of crude oil. There are a number of refineries and other plants for the manufacture of oil fuel, kerosene, etc. The imports in 1926 were valued at \$4,407,074; exports, \$5,546,376; revenue, \$1,737,288; expenditure, \$1,580,213; public debt, \$3,342,056. The total shipping which entered and cleared in 1926 was 3955 vessels of 4,933,553 tons. The colony of Trinidad is under a governor who is aided by an executive council and a legislative council. Governor in 1928, Sir Horace Archer Byatt.

TRINITY COLLEGE. An institution for the higher education of men, at Hartford, Conn.; founded by members of the Protestant Episcopal Church in 1823, as Washington College, and changed to Trinity College in 1825. For the autumn term of 1928, the enrollment was 276, distributed as follows: Graduate students, 10; seniors, 45; juniors, 56; sophomores, 75; freshmen, 83; non-matriculants, 7. There were 34 members on the faculty. The endowment fund of the college amounted to \$3,070,385, and the income totaled \$253,625, exclusive of \$183,919, received in gifts during the year. There were

approximately 100,000 volumes and 40,000 pamphlets in the library. President, Remsen B. Ogilby, Litt.D., LL.D.

TRINITY COLLEGE OF DUKE UNIVERSITY. See DUKE UNIVERSITY.

TRIPOLITANIA. An Italian territory on the north coast of Africa; until 1919 a part of Italian Libya. In that year, for administrative purposes, Libya was divided into Tripolitania and Cyrenaica. Area, estimated at 900,000 square miles; population, according to the census of 1921, about 550,000 natives, and 20,716 Europeans, of whom 18,093 were Italians. The land is rather barren, but supports some palm, lemon, olive, and fig trees. The sponge fishing industry along the coast is of great importance. In 1926 production totaled 109,450 pounds, valued at 5,472,000 lire. The imports in 1926 were 211,217,533 lire; exports, 45,246,772 lire; colonial revenue for 1927-28, 217,374,250 lire; civil expenditure, 53,420,000 lire; military expenditure, 163,954,250 lire, revenue and expenditure, 1928-29, 223,719,250. The chief means of transportation is along caravan routes to the interior. There are also about 117 miles of railway. Tripoli, with a population of approximately 60,000, is the capital. Governor in 1928, General Emilio de Bono. See CYRENAICA.

TROPICAL STORMS. See METEOROLOGY.

TROTTLING. See RACING.

TRUANCY. See CRIME; CHILD LABOR; CHILD WELFARE.

TRUCK FARMING. See HORTICULTURE.

TRUST COMPANIES. See BANKS AND BANKING.

TUBER/CULO'SIS. THE CALMETTE SERUM.

The Hygienic Section of the League of Nations met at Paris, October 15-18, to pronounce an opinion on the value of Calmette's method of immunization of infants against developing tuberculosis in later life. Roux, the successor of Pasteur and Metchnikoff as director of the Pasteur Institute, presided. The section was subdivided into bacteriological, clinical, and veterinary subsections. Thirty experts in various lines made up the conference. In Germany the method of immunization had not yet been tested on human subjects, but in France and the other Latin countries it had been tested in at least 150,000 infants, although for the most part the period was too recent for formal conclusion. To cite a single example, Dr. Bravo y Friar, head of the Madrid Foundling Asylum, submitted 385 infants to the Calmette immunization, while 880 others were not treated. The mortality in this institution is always high—about 36 per cent. It can only be said that the vaccinated group showed a higher death rate than the unvaccinated, but the deaths from tuberculosis were somewhat fewer in the immunized—1.1 per cent as against 3.8 per cent. Tests evidently are unsuitable in foundling asylums, because few deaths occur from tuberculosis at best in these institutions, and the large number of premature births is responsible in part for the heavy mortality. Many diseases contribute to the death rate and tuberculosis has little chance to vie with the more acute affections. Calmette objected that the reports sent in from various sources were incomplete, and gave no material for a statistical basis. It must be confessed, however, that Calmette himself not being a professional statisti-

cian, his own figures and conclusions may be open to criticism. There should be an adequate way of connecting the degree of exposure to the disease with other figures and two groups should be made of those who have and have not been exposed to open tuberculosis among their elders.

Much better support of Calmette's immunization came from Oslo, Norway, where not infants but young schoolgirls were the subjects. In the absence of exact details, it appears that the immunized subjects reacted negatively to tests with tuberculin and did not develop any victims of the disease; while many of the same age periods who were not vaccinated developed active tuberculosis.

Evidence from the veterinarians present was unanimous that the Calmette product had decided immunizing properties, although the reporter did not give any figures. The reporter in question was Dr. Schlossmann, of Düsseldorf, who covered the conference for the *Deutsche medizinische Wochenschrift* (Nov. 9, 1928). His summary of the results of the meeting are in part as follows:

First, the vaccine, known familiarly, for short as BCG, is harmless, wide experience with both mankind and animals having made this obvious. Therefore there need be no scruples against its general use, although for the present this should probably be restricted to groups which have been living in a tuberculous medium. Second, as to the degree of protection given, favorable reports from all veterinarians who have employed it cannot be straightway applied to mankind, and Dr. Schlossmann is none too sanguine about the prevention of human tuberculosis. He reaches this conclusion largely, it seems, from experiments carried out by himself on apes, but as these experiments are still in progress and need to be carried out on a larger scale than heretofore, he will for the present hold his opinion in reserve. In any case he is far from saying that Calmette's long years of work have been wasted, for it may be shown that he has advanced our knowledge along several lines. For example, he seems to have shown that the dreaded aerial transmission of tuberculosis is a myth. Calmette again must be thought of as one of the most distinguished disciples and successors of Robert Koch. The conference was to meet again and much may transpire in the meaning. See also CHEMISTRY, under *Biological Chemistry*.

TUBERCULOSIS, ANIMAL. See VETERINARY MEDICINE.

TUFTS COLLEGE. A non-sectarian institution for the higher education of men and women at Medford, Mass., founded in 1852. It comprises the school of liberal arts, Jackson College (the department for women); the engineering school; the school of religion on the Crane Foundation; and the medical and dental schools. The registration for the autumn term of 1928 was 2037. For the year 1927-28 there were 407 members on the faculty. The productive funds of the college amounted to \$7,913,501, and the income for the year to \$853,092. The library contained 93,000 volumes. President, John Albert Cousens, LL.D.

TULANE UNIVERSITY OF LOUISIANA, THE. An institution of higher education, located at New Orleans, founded in 1834. Although the professional schools are coeducational, there is

a separate undergraduate department for women. The total enrollment for the autumn term of 1928 was 2836, excluding all duplications, and was distributed as follows: Arts and sciences, 450; engineering, 277; H. Sophie Newcomb College, 626; graduate, 120; law, 97; medicine, 436; graduate medicine, 43; pharmacy, 23; commerce and business administration, 525; courses for teachers, 224; social work, 15. There were 1133 enrolled in the 1928 summer session. The faculty numbered 412 members. The productive funds of the university for the fiscal year ending August 31, 1928, amounted to \$8,982,001; the income for the year to \$1,249,115; and gifts and bequests totaled \$1,623,647. The library contained 132,945 volumes. During the year a new building for the college of law was erected, greatly increasing the facilities of that department, and a dormitory for women was also constructed. A four-year course in physical education for men and a special course in parasitology were established; the work in psychology and sociology was expanded; a further development took place in full-time instruction in the school of medicine; additions were made to the faculty of the college of law; and the university sent its fourth scientific expedition from the department of Middle American research into Central America. President, Albert Bledsoe Dinwiddie, Ph.D., LL.D.

TULAREMIA. Much was being learned as to the incidence of this relatively new disease not only in mankind but in many species of wild life, including food animals. In a brief editorial summary in the *Journal of the American Medical Association* for May 26, 1928, it was pointed out that the Minnesota State Board of Health had reported a diminution in the number of wild rabbits and of partridges during the past four years coincident with the appearance of human victims. The rabbits which remain show the presence of specific agglutinins in the blood, indicating a successful resistance to the microorganism which causes the disease. The discovery of the rabbit tick upon the partridge may explain how game birds may become infected from the quadruped. In the laboratory both rabbit and bird succumb readily to artificial inoculation with the *Bacterium tularense*. Thus far, no case in man has been traced to cleaning the partridges, but the number of these which are sold for food is far smaller than that of the rabbit. In California, the ground squirrel and meadow mouse are among the animals to contract the disease, possibly through the intermediation of mites.

TUNIS. A French protectorate in North Africa, known as the Regency of Tunis, situated on the Mediterranean coast east of Algeria, bounded on the south by the Sahara and Libyan deserts. The area is estimated at 48,300 square miles. According to the census of 1926, the total European population was 173,281, composed of 71,020 civilian French, 89,216 Italians 8396 Maltese, 517 Spaniards, 646 Greeks, and 3486 other foreigners. The total native population was 1,986,427, of whom 1,932,184 were Arabs and Bedouins, and 54,243 Jews. The capital is the City of Tunis, with a population in 1926 of 185,996; other towns are Sfax, 27,723, and Bizerta, 20,593. In 1927 there were 434 public schools, including 8 lycées and colleges, and 32 private schools, of which six were Jewish schools provided by the Government. The total number

of pupils in the schools was 64,568. There are, besides, numerous Mohammedan schools, some of which are assisted by the state.

The chief industry is agriculture and the principal crops are wheat, barley, and oats. The soil is well adapted to fruit culture, and in the South dates are especially abundant. Olive trees abound in many parts of the country. The area under wheat in 1926 was 1,861,670 acres, the production 355,000 tons; barley, 1,420,752 acres, 192,000 tons; oats, 96,227 acres, 31,000 tons. There were 16,181,744 olive trees, which produce about 40,000 tons of oil annually. There were 2,138,000 date palms, of which 1,034,892 produced 1,000,000 pounds of dates. The livestock consisted of 86,851 horses, 154,175 asses, 36,800 mules, 467,588 cattle, 2,171,970 sheep, 1,582,443 goats, 153,162 camels, and 23,568 pigs. Among the native industries are spinning and weaving, pottery making, saddle making, etc. The mineral resources include lead, zinc, and iron ore and especially phosphates.

Advance figures of Tunisia's foreign trade during 1927 showed total imports valued at 1,772,000,000 francs (\$69,550,000), marking a 30 per cent gain in francs and a 60 per cent gain in dollar value. Exports valued at 1,027,000,000 francs (\$40,310,000), declined 14 per cent in nominal value, and about 4 per cent on a dollar basis. The much heavier adverse visible trade balance is only slightly offset by tourist trade and other invisible items. France maintained its leadership in the Tunisian market, supplying 56 per cent of the imports by value and taking 37 per cent of the exports. Products from the United States valued at 81,869,000 francs (\$3,213,000) comprised mainly machinery and parts, kerosene and gasoline. The United States purchased goods valued at 19,768,000 francs (\$776,000), chiefly olive oil and iron ore.

The revenue for 1927 was 388,050,521 francs and the expenditure 388,000,566 francs. In 1926, 9423 vessels entered the ports of Tunis; in the same year there were 1258 miles of railway, of which 315 miles were broad gauge. The Bey of Tunis in 1928 was Sidi Mohamed, who succeeded July 10, 1922. The Government, known as the Regency of Tunis, is under the French Foreign Office, which is represented by a Resident-General. The administration is a mixture of French and native institutions. Resident-General in 1928, Lucien Saint (appointed Nov. 24, 1920).

TUNNELS. The year was marked by the completion in record time of the greatest railroad tunnel of the Western Hemisphere, the Cascade Tunnel on the Great Northern Railroad; by the opening of the Oakland Vehicular Tunnel in California, and by the start of the Detroit Tunnel. Apparently, the "pioneer tunnel" method had become the standard plan for long rock tunnels. In subaqueous tunneling, the trench system and the shield method had been so standardized as to make subaqueous work, even of large diameter, primarily a matter of engineering economics rather than a problem involving great and unprecedented problems of design and construction. In short, with modern methods it was becoming clearer that cost and market were the only limits to size, and that, as increased possibilities of traffic promise a satisfactory return on invested capital, even greater works will be undertaken.

THE CASCADE TUNNEL. The official opening of this tunnel, set for January 12, 1929, was

awaited with particular interest both because it is the longest railroad tunnel of the Western Hemisphere and because its opening was to be coincident with the change from steam to electricity in the operation of the mountain portion of the Great Northern Railroad. Back in the early nineties, John F. Stevens, the American railroad engineer who put the Panama Canal on its feet after earlier failures, discovered the Marias Pass and later built the first Cascade tunnel, 2.6 miles long, opened in 1900. This work made unnecessary a climb of 600 feet and a circuitous route of 12 miles to the "Stevens Pass," as the Marias Pass was renamed.

The new tunnel is 7.79 miles long and is only surpassed by the famous Alpine tunnels in Europe. It lowers the summit level of the railroad 502 feet, eliminates curves equivalent to over 10 complete circles, reduces the length of the maximum grade (2.2 per cent) by 18 miles, eliminates nearly 8 miles of snow sheds and actually reduces the length of track in tunnels and snow sheds combined by over 2 miles. The great reduction in the snow problem is one of its great benefits, for in this region one foot of snow in one hour is not an unusual rate and 100 feet on a level in a season is frequently exceeded.

The tunnel was built in the rapid time of three years which, compared with earlier works, showed clearly the advantages of modern methods and machinery. An intermediate shaft was sunk 622 feet to the tunnel grade about 2½ miles west of the east portal, thus giving four headings from which the work could go forward. A pioneer tunnel, 8 feet high and 9 feet wide, was also driven between this shaft and the west portal, about 50 or 60 feet to one side, with cross-cuts to the main tunnel. In this scheme, the main tunnel could be worked from the cross-cuts joining it with the pioneer tunnel. Furthermore, the pioneer tunnel served not only as a means of ingress and egress for the working force but also for the main compressed-air and other supply lines and for removing excavated material from advanced workings. It thus becomes the key to rapid construction and its additional cost was more than balanced in many cases by the fact that time was thus saved.

The Cascade Tunnel is a single-track section 18 feet wide and 24 feet high in rough rock excavation but reduced to 16 by 22 by the concrete lining. There were required 875,000 cubic yards of excavation, 264,000 cubic yards of concrete were placed; and the cost was about \$14,000,000. The original tunnel was electrified between 1908 and 1909, since which time there had been more extensive electrification on the Great Northern which was to include the new tunnel and a total of some 75 miles on the mountain division of this road.

NEW MUSCONETCONG TUNNEL. Traffic through this new 4840-foot double-track tunnel on the Lehigh Valley R. R. in western New Jersey was inaugurated November 26. It was built to relieve the old single-track tunnel nearby, which was completed in 1875 and which was considered a very remarkable work at that time. Consult *Railway Age* (New York) p. 441, Feb. 23, 1929.

MOFFAT TUNNEL. This work, described in previous YEAR BOOKS, was officially opened on February 26. It shortens the Moffat line between Denver and Craig, Colorado, the present terminal, by 23 miles, eliminates all 4 per cent grades,

and, should the 42-mile cut-off to the Denver and Rio Grande Western be built, would give a route between Denver and Salt Lake City 172 miles shorter than that now used.

GIBRALTAR TUNNEL. The New York *Times* announced, on December 16, that a commission of experts had been appointed to make a study for a tunnel to link Europe and Africa by rail under the Strait of Gibraltar. It was pointed out that such a construction would connect with the the French Sahara Railroad and make an all-rail-route to Cairo and ultimately a connection with the Cape-to-Cairo Railroad. The length under water was given at 8½ miles, but it was said that a depth of over 1000 feet was necessary which would require long approach tunnels in order to secure reasonable grades and might make the total length as much as 33 miles.

ZION PARK TUNNEL. A remarkable and spectacular tunnel was being built in Zion National Park, Utah, as part of a new road construction. The tunnel is 22 feet wide on a 5 per cent grade and is 5582 feet long. It starts at the north rim of the Grand Canyon of the Colorado and at intervals of 1100 feet or less, galleries are to be cut through to the face of the cliff, commanding views across the canyon and the valley 1000 to 1200 feet below. The surveys were particularly difficult and had to be made by triangulation from lower levels on the opposite side of the canyon.

THE OAKLAND ESTUARY TUBE. This subaqueous highway tunnel, of a larger diameter than any yet built, was opened to traffic in October, 1928. It is 3545 feet long between portals and two-thirds of this length consists of twelve precast segments, each 203 feet long, built in drydock, floated to the site, and sunk in position in a trench previously dug in the bottom of the estuary between Oakland and Alameda, California, which are connected by the tube. Work of dredging this trench, a cut as much as 50 feet deep below the estuary bottom, began in 1925 and piles were driven in part of the length to furnish support for the tubes. The sections were closed by temporary bulkheads and were successfully placed with their bottoms about 90 feet below water level. The section used for this tunnel is 37 feet outside diameter and provides a roadway 24 feet wide with two tracks, as it is to be used for both vehicular and electric-railway traffic. A ventilating system similar to that used in the Holland Tunnel in New York is provided.

DETROIT-WINDSOR TUNNEL. Contracts were let during the year for a vehicular tunnel between Detroit, Michigan, and Windsor, Ontario, the first international work of this kind ever built. It was to be a single tube slightly larger than those of the Holland Tunnel in New York but of considerably less length—5000 feet, portal to portal. Three types of construction were to be used. The river portion, 2500 feet, was to be built in sections 248 feet long and sunk in a trench excavated in the river bottom, a method which had been successfully used in the Oakland and earlier subaqueous constructions. The approaches were to be built partly by shield tunneling and partly in open cut.

An interesting and novel design was to be used for the river sections. The 248-foot units are to be built on shore, 21 feet diameter and made of an exterior welded in steel shell ¾ inch thick and lined with 18 inches of concrete. This shell is to be stiffened with flanged hoops at 12-foot in-

tervals and in wood forms. After sinking, concrete will be deposited around the tube and inside the forms, to a thickness of about 2 feet, by means of tremie tubes. Apparently, this vehicular tunnel, which was to be privately owned and operated and was estimated to cost \$10,000,000, would be in direct competition with the Detroit International Bridge now under construction.

TUNNEY, GENE. See BOXING.

TURBINES, STEAM. See STEAM TURBINES.

TURBINES, WATER. See WATER POWER.

TURKEY. A republic since Oct. 29, 1923; formerly the Ottoman Empire; occupying a portion of the Balkan peninsula—Turkey in Europe—and a large part of Asia Minor with contiguous territory—Turkey in Asia; since the Treaty of Lausanne, July 24, 1923, comprising in Asia Minor the territory lying within the Caucasian frontier, the northern part of the old Turco-Persian frontier, the frontier between Turkey and Syria extending from Jazira-ibn-Omar on the Tigris to a point near Payas on the Gulf of Alexandretta, and the so-called "Brussels" line between Turkey and Mesopotamia in Europe. Constantinople and eastern Thrace, according to boundaries fixed in the treaty; and, in the Mediterranean Sea, Imbros, Tenedos, and Rabbit Islands. Capital, Angora.

AREA AND POPULATION. The area of the present Republic of Turkey is estimated at approximately 494,538 square miles. For the first time in its history a general census was taken on Oct. 28, 1927, and showed the population to be 13,649,945. In Turkish returns published early in 1924, the population of the principal cities was given as follows: Constantinople, 880,998; Smyrna, 98,846; Konia, 71,104; Brussa, 64,664; and Adana, 64,110. The population of Angora is given as 75,000.

EDUCATION. Nominally, elementary education is compulsory for all children of both sexes. The schools are directly in charge of the Ministry of Education. The policy of the Republic has been to abolish religious schools of all kinds and replace them with government schools. Thus in 1924 the numerous Moslem schools were closed. The government schools comprise primary grades, secondary schools, training schools for teachers, and the University of Constantinople. No statistics were available during the year.

PRODUCTION. As Turkey is primarily an agricultural country, its economic condition is dependent on returns from this source. This dependence is reflected to some extent in the exports of tobacco, fruits, and vegetables, which normally constitute 50 per cent of the value of total exports. Although gradual progress has been made in increasing production of the leading crops, intermittent small yields, owing to adverse weather, have retarded any general recovery. Preliminary agricultural returns for 1927 indicated an improvement over 1926 for most crops. Tobacco production was estimated at 91,500,000 pounds against 84,000,000 pounds in 1926; cotton, 57,360,000 pounds in 1926-27 compared with 50,272,000 pounds in 1925-26; fig and raisin crops, 25,000 and 47,000 metric tons, respectively, for 1927, against 30,000 and 50,000 tons in 1926; filbert production, 15,000 metric tons against 5000; wool, 11,900,000 pounds, against 10,170,000 pounds; mohair clip, 3700 metric tons against 3100 tons. Data on the wheat production were not available, but unfav-

orable weather was thought to have caused a large decrease from the 1926 estimate of 4,700,000 metric tons. The 1927 olive-oil yield was estimated at 35,000,000 pounds. Livestock reports showed an increase over 1926 in sheep and goats, but a decrease in cattle and horses.

Although industry is relatively unimportant in Turkey, the trend of economic development is reflected, to some extent, in the slow recovery of the leading industries from the general disorganization which followed the exodus of the non-Moslem population, who predominated in this field. Rugs and textiles constitute the principal manufactures. The progress of the rug industry is indicated, to some degree, by the exports of this industry through the port of Smyrna in recent years. In 1927 they totaled 5,344,300 kilos, as compared with 4,709,000 kilos in 1926, and 3,996,000 kilos in 1925. These statistics include reexports from adjoining countries. Other small industries are flour milling, cement, brick, furniture, soap, etc.

COMMERCE. Foreign trade data for recent years show a preponderance of imports over exports. Statistics for 1926, the latest available, disclose a decrease in the value of exports and imports, as compared with the previous year, with a slightly smaller adverse trade. Exports and imports for 1926 were \$98,096,000 and \$122,574,000, respectively; similar figures for 1925 were \$105,134,000 and \$131,916,000. The accompanying table from the *Commerce Year Book* for 1928 gives the imports and exports for 1925 and 1926 by principal classes of commodities:

TURKISH IMPORTS AND EXPORTS BY PRINCIPAL CLASSES OF COMMODITIES (IN THOUSANDS OF DOLLARS)

Commodity	1925	1926
GENERAL IMPORTS		
Grain, legumes, and products	12,353	3,200
Sugar, coffee, tea, spices	11,358	10,516
Hides and skins, bristles, etc.	1,790	1,910
Leather and manufactures; furs ...	3,053	3,297
Cotton and manufactures	40,355	37,610
Flax, hemp, jute	3,780	2,998
Wool and manufactures	9,595	10,948
Silk and manufactures	2,543	2,663
Mineral oils, soap, candles	1,991	5,440
Metals	11,735	11,622
Machinery	4,205	5,303
Vehicles and vessels	2,997	3,453
Vegetable oils	4,607	1,961
Chemicals, drugs, dyes, medicines ..	3,179	2,715
GENERAL EXPORTS		
Meats, dairy products, fish	4,484	1,904
Grain, legumes, and products	3,087	3,235
Fruits and vegetables	20,479	18,124
Tobacco	33,200	35,316
Hides and skins, bristles, etc.	2,499	1,915
Leather and manufactures; furs ...	1,677	1,330
Cotton and manufactures	8,426	6,323
Wool and manufactures	6,287	8,390
Wood and manufactures	2,171	2,313
Seeds, plants, fodder	2,185	1,158
Metals and ores	2,045	2,589
Chemicals, drugs, dyes, medicines ..	6,435	6,135

FINANCE. Budget estimates for 1928-29 showed receipts at £T207,173,000 (\$105,451,000) against £T194,580,000 (\$99,042,000) budgeted for 1927-28. Increases were anticipated from monopolies, miscellaneous sources, and arrears. Larger expenditures were authorized for the public debt and Ministry of Public Works. In each of the two years the budget as voted was balanced. Receipts from monopolies furnish an important source of revenue; they embrace tobacco, salt, sugar, petrol, playing cards, alcohol, matches, posts, etc.; in 1928-29 estimated rev-

enues were £T58,040,000 (\$29,542,000). Expenditures on the reconstruction plan continued large; budget appropriations for the Ministry of Public Works in 1927-28 totaled £T25,723,000, in 1928-29, £T32,718,000. Preliminary budget estimates for 1929-30 disclosed revenues of £T220,291,300 and expenditures of £T220,297,000. The plan to retire the old paper currency, which went into effect on Nov. 1, 1927, was expected to be completed in six months.

COMMUNICATIONS. Lack of adequate transport system has to a large degree retarded the economic recovery of the country. Slow progress has been made in developing the roads urgently needed, but general extension of transport facilities has been handicapped by the limited financial resources. At the close of 1927 there were approximately 4500 kilometers of railway line in operation in the country, while contracts for construction of about 1500 kilometers of new railways were placed during the year by the Government. It was reported in the press late in the year that the Turkish Government had acquired the German-built Anatolian-Bagdad Railway through the completion of an agreement providing the payment of 50 per cent back interest and 4½ per cent interest on stock. It was stated that by the completion of this transaction all Turkish railroads had become State property. With a view to serving the northern section of the country, which is not readily accessible to the port of Constantinople, plans were under way for the construction of a harbor at Samsun. Although Turkey's coast line is extensive, its harbors are few and lack sufficient technical facilities and suitable connections with the interior. At present, Constantinople has the best harbor, from a natural, as well as an artificial, point of view, followed by Smyrna. The latter port, however, is the country's leading shipping point. A total of 2255 steam and sailing vessels of 1,775,059 tons called at Smyrna in 1927, as compared with 2227 vessels and 1,935,200 tons in 1926.

GOVERNMENT. As a result of the revision of the constitution in April, 1924, the Turkish state was declared to be a republic; the religion, Islam; the official language, Turkish; and the capital, Angora. The Assembly was to be elected every four years. While, according to Article 7, the Assembly exercises the executive power through the President elected by itself and through the council of ministers chosen by him, there is a proviso that the Assembly may at any time control the actions of the Government and at any time dismiss it. The President was to be chosen from among the deputies constituting the National Assembly, and his term of office was to be identical with the life of each Assembly. He is *ex officio* president of the Assembly and also, in case of necessity, of the council of ministers. He may, however, take no part in the debates of the Assembly, nor has he absolute power to veto legislation or to dissolve the Assembly. President in 1928, Mustafa Kemal Pasha. The cabinet was constituted as follows: President of the Council, Ismet Pasha; Interior, Shukri Kaya Bey; Finance, Sarrajoglu Shukri Bey; Public Works, Behij Bey; Foreign Affairs, Dr. Tewfik Rushdi Bey; Justice, Mahmud Essad Bey; Public Instruction, Nejati Bey; Public Health, Dr. Refik Bey; Agriculture and Commerce, Rahmi Bey; Defense and Marine, Mustafa Abdul Halik Bey.

HISTORY. The rule of Mustapha Kemel carried Turkey to new heights of industry and prosperity during the year. There were no signs of outward trouble and although from time to time there were reports in the press to the effect that Communists and plotters against the life of the President had been arrested and punished, the internal affairs of the Republic were likewise calm and unruffled. The westernizing movement went on apace, the most important change taking place during the year being the substitution of the Roman alphabet for the Arabic, which was decided by the President in August. A matter of passing interest to Americans was the trial and conviction of three members of the faculty of the American Schools for Girls at Brusa for the spreading of religious propaganda. They were accused of converting Moslems to Christianity, and were fined, but the fines meted out were extremely light.

October 29 was set aside to celebrate the fifth anniversary of the establishment of the Republic. For Italo-Turkish treaty, see **ARBITRATION, INTERNATIONAL**.

TUSKEGEE NORMAL AND INDUSTRIAL INSTITUTE. A non-sectarian, normal and industrial school for the higher education of Negro men and women, at Tuskegee, Ala., founded in 1881 by Booker T. Washington. The Institute gave regular and systematic instruction during the year to a total of 3323 persons distributed as follows: Preparatory, normal, and college courses, 1486; children's house, 377; summer school, 798; short course in agriculture, 192; short course for demonstration agents, 27; short course for vocational teachers, 29; annual clinical courses, 150; and 4-H club conferences, 264. Of the students registered for the regular courses in the winter term, 870 were men and 616 women. There were 274 members on the faculty, of whom 150 were men and 124 women. The endowment fund amounted to \$7,308,397, and the income for the year to \$485,206. There were 40,000 volumes in the library. President, Robert Russa Moten, LL.D.

TUTANKHAMEN, TOMB OF. See **ARCHÆOLOGICAL**.

TUTUILA. See **SAMOA**.

TYPHOID FEVER. **POLLUTION OF SWIMMING WATER.** Each year with the approach of the bathing season efforts are made by health officers to lessen the possibility of contracting typhoid from harbor waters, beaches, swimming pools, etc. If bathing in proscribed waters cannot be prevented, efforts may be made to treat the sewage with chlorine or otherwise. In examining suspected waters there has been a standard suggested for several years past and any water containing more than ten colon bacilli to 100 cubic centimeters has been pronounced unsafe. In the *American Journal of Hygiene* for May, 1928, Winslow and Moxon publish the report of a survey of the harbor at New Haven, from which it appears that only one bathing beach in the vicinity is safe for bathers. Many cases of the disease have occurred in that city which could be traced to bathing in the harbor or at the adjacent beaches and it may be recalled that the first cases of the disease traceable to oysters occurred in 1894 at Wesleyan University and that the oysters came from beds near the outlet of the New Haven sewers. Attempts at the sanitation of bathing beaches and harbors are patterned on older efforts directed against swimming pools, first ap-

plied at Tidal Basin Bathing Beach in Washington.

PERORAL IMMUNIZATION. This method of preventing typhoid fever has been tested in certain localities, such as industrial centres in parts of Europe. Dr. S. Hirsch relates his experience in the small industrial city of Osijek in Jugo-Slavia. Typhoid has prevailed as an endemic in this region for more than a century. Occasionally, as in 1903-05, the incidence has assumed epidemic proportions. In recent years the number of deaths and the mortality have both been relatively low, the city of 8000 inhabitants having from 50 to 100 cases annually with a death rate averaging about 6 per cent. The indigenous inhabitants seem more immune than the newcomers. This low incidence and mortality are evidently due in part to the ordinary anti-typhoid inoculation practiced on a large portion of the populace. Because of certain objections to this recourse, chiefly detention from work, the peroral method has been tested in sharply limited sections of the town, making use of the so-called "immunoids" obtained from the Hygienic Institute at Zagreb. Those previously immunized by inoculation were not included in the test. The interval covered was only a part of the years 1927-28. The number to develop the disease appears to have been very small, a few cases only for the latter part of 1927 and none at all during 1928. The results from the peroral method seem at least equal to those obtained by inoculation.

WATER AS CAUSE OF TYPHOID OUTBREAKS. Water is often regarded as the most common source of typhoid transmission, but in the experience of the State Department of Health of New Jersey for 20 years, comprising 180 outbreaks of typhoid fever including paratyphoid with 2643 cases, milk comes first, other foods in general, second, and water only third as the source of transmission; this despite the fact that pasteurization of milk was coming more and more into use. The risk from foods in general could be minimized by cooking and serving hot, but the public does not always take kindly to the use of heat which often militates against palatability. A concrete example under this head was the occasional rôle of salads in disseminating the disease and an epidemic at Freehold, of 36 cases with four deaths, was shown to have been due to eating chicken salad. The carrier problem was touched on only in a casual manner. Of 45 persons who took part in catering to the 500 people who partook of the salad one, who aided in cutting up chicken and celery, was found to be a carrier. In an earlier mass supper in Burlington Co., the percentage of those to contract the disease was much higher; thus, of about 300 participants, 201 were victims, salad having again been the medium of transmission.

TYROL. *tä-röl*. A crownland of Austria before the collapse of the Austro-Hungarian Empire, situated in the Alps; after the War it was divided between Italy and the new Republic of Austria. The former received the southern portion and the latter the northern. Total area before the War, 10,302 square miles; population, 946,613. Area of the Austrian province, 4882 square miles; population, according to the census of 1923, 314,836.

TYROL QUESTION. See **AUSTRIA**, under *History*.

UBANGI-SHARI. See **FRENCH EQUATORIAL AFRICA**.

UGANDA, ō-gān'dā, **PROTECTORATE**. A protectorate of Great Britain in East Africa; lying north of Tanganyika. For administrative purposes it is divided into four provinces: namely, Eastern Province, Northern Province, Western Province, and Buganda. Area, 94,204 square miles; population, estimated in December, 1926, 3,136,946, composed of 3,123,581 natives, 11,613 Asiatics, and 1752 Europeans. About 790,000 of the natives belong to the civilized Baganda, a race converted to Christianity.

The chief product is cotton, which is grown almost entirely by the natives on an area estimated at 583,400 acres in 1926. The other products include cacao, oil seeds, coffee, and Para rubber. The total exports for 1926 were £3,597,437, mainly cotton (£3,051,791). The import figures are not available because they are merged with those of the Kenya Colony. See **KENYA COLONY**. The combined imports into Kenya and Uganda in 1926 amounted to £7,441,000 and the exports from Uganda were estimated at £3,597,000. The decrease in 1926 as compared with 1925 was almost entirely due to the decrease in cotton shipments and lower cotton prices. The revenue in 1926 was £1,389,641; expenditure, £1,295,612. The protectorate is directly under the British Government, represented by a governor and commander-in-chief, but the native rulers are supported in the management of their own subjects. Governor and commander-in-chief in 1928, Sir W. F. Gowers.

UKRAINE. A region known officially as the Ukrainian Socialist Soviet Republic; including the autonomous Moldavian Socialist Soviet Republic (formed in September, 1924) and the following provinces of the former Russian Empire: Kharkoff, Poltava, Chernigov, Kiev, Volhynia, Ekaterinoslav, Odessa, Nikolaiev, Kremenchug, Donetz, Zhitomir, and Podolia. Area, 174,201 square miles; population, in 1926, 29,020,304. Capital, Kiev, with a population, in 1923, of 403,730. The great bulk of the population adheres to the Ukrainian Orthodox Church. In 1926 there were 17,832 elementary and secondary schools having 2,122,100 pupils. The soil is fertile and the chief products are wheat, rye, oats, beets, tobacco, corn, and potatoes. In 1925 there were 4,100,000 horses, 8,000,000 cattle, 9,300,000 sheep, and 3,600,000 pigs. In 1925-26 the budget balanced at 182,594,836 gold rubles. There are approximately 10,13 miles of railways in Ukraine, about two-thirds of which are State-owned; about 2500 miles were reported under construction. The Government of Ukraine is modeled on that of Russia. At the head of the administration is a council of people's commissars. See **RUSSIA**.

UNDERWRITING, **UNDERWRITERS**. See **INSURANCE**.

UNEMPLOYMENT. The beginning of the year saw the continuance of the discussion of the unemployment situation in the United States. Governor Smith and the New York State Labor Department insisted that New York State had seen a decrease of 66,000 persons in the State's factory wage earners. Similar reports were being made public in Ohio, Illinois, and New England. The New York Labor Bureau insisted that the total number of unemployed persons in the country was reaching 4,000,000, nearly one-tenth of the working population of the country. It estimated that the loss of employment over the period 1923-27 had been as follows in the specified industries: Manufacturing, 1,000,000; rail-

ways, 100,000; coal mines, 100,000; farm workers moved to town, 1,000,000. On the other hand there had been a gain of 300,000 workers in the building trades. This made a net loss of 1,900,000 workers. The Bureau, continuing its calculations, pointed out that a net increase in the working population over 1923-27 had been 3,000,000 and that therefore 4,900,000 workers were not being accounted for. It could place only 1,850,000 of these in the following industries: professions, amusements, public utilities, automobile sales and service, other distribution, miscellaneous. This left a net balance of 3,000,000. If to this figure the 1,000,000 unemployed of 1923 were added, we obtain the Bureau's estimate of four million persons not working in the winter of 1927.

The reader may ask, why these elaborate and disingenuous calculations? For the reason that there were no means of collecting unemployment figures in the United States. If the country had the system of public unemployment exchanges to be found in most of the European countries, it would be in a position to know at any given time how many people were actually out of work. Otherwise, recourse must be had to guessing. Governor Smith and Senator Wagner of New York were guessing that the figures were quite high, first because New York City was actually seeing a good deal of unemployment, and second, probably, because 1928 was a presidential year and Governor Smith was to be a candidate.

On the other hand, the Federal Bureau of Labor Statistics was guessing that the figures were low. The Bureau of Labor Statistics was in the Department of Labor which is headed by a cabinet officer. The National Administration was being attacked on the floor of the Senate by the political opposition. The Department of Labor's business was to know how many people there were out of work in the country (though it had no more means of knowing than the average editorial writer). Because the Secretary of Labor was opposed to such schemes as Federal employment exchanges, because the administration of which he was an officer did not publicly believe that unemployment existed, for a number of reasons the Department of Labor was guessing that the figures were low. Therefore, in March a statement was prepared for the Secretary of Labor by the Bureau of Labor Statistics to the effect that the total number of unemployed in the country was only 1,874,054, as against Senator Wagner's 4,000,000.

How were the Bureau of Labor Statistics' figures derived? They were based on the known figures for 1925 of the wage earners in the manufacturing industries and the railroads. From these 1925 figures, 1928 estimates were made. These estimates leave out the following industrial groups: agriculture, mining, clerical workers, domestic help, and persons engaged in trade. The process was:

1. In 1925 there were 10,136,370 persons employed in the two industrial groups cited.
2. For January, 1928, it was estimated that 9,383,263 persons were employed in the same groups.
3. There was a shrinkage of 753,107, or 7.43 per cent.
4. In 1925 there was a total employed group of 25,222,742 and if the same shrinkage is applied all along the line, the 1928 employed group would be 23,348,682 or a net loss of 1,874,054.

It seemed apparent to many that the Department of Labor was talking of a calculated shrinkage based on dubious estimates. It was generally charged that the unemployment debate in the Senate and in the newspapers was inspired by political motives. In the spring, the headlines disappeared from the city streets, statesmen therefore took this to assume that unemployment was over and the subject no longer made its appearance in newspaper columns and the floor of public assemblies.

It also seemed clear to many social workers that unemployment would continue to raise its head periodically unless a statesmanlike programme was developed and carried out. Such a programme to be effective, authorities agreed, must contain the following elements: Federal, State, and city employment exchanges; one form or another of unemployment insurance; and long-range planning of public works by public authorities. Without public employment exchanges in every district of the country, no real unemployment figures can ever be collected. The current figures in circulation were based on calculated shrinkage from one known census year to other periods following.

Unemployment insurance is necessary for the stabilization of industry and the real protection of the working populations. In at least one industry, that of men's clothing, private employment insurance made steady progress, as may be seen below. Finally, a system of long-term planning of public works with some sort of reserve ready to meet emergencies would help materially to tide over periods of depression. This last aspect of a programme for unemployment is discussed in the section immediately following.

PROSPERITY RESERVE. The Jones Bill incorporating an interesting attempt to cope with unemployment on a scientific basis was reported out of the Senate Commerce Committee in the spring. This measure carried an appropriation of \$150,400,000 for public works, i. e., rural post roads, river and harbor improvements, flood control, and public buildings, to be used only when the volume of construction work in the country had fallen 10 per cent for a three-month period, as compared with the average of the similar period of the preceding three years. This special appropriation was to be considered a "prosperity reserve" (a term coined by the American Association for Labor Legislation) to help meet the problems of unemployment.

John B. Andrews, at the public hearings before the Senate Committee, indicated that the plan for a "prosperity reserve" had the approval of engineering societies, associations of contractors, the labor movement, President Coolidge, Secretaries Mellon and Hoover, and Governor Smith. Mr. Andrews, in his argument for the measure, pointed out that a bill of the sort proposed would not only benefit men in public-works construction but would call upon at least 27 industries for materials, etc. Similarly, such a plan, reaching into every section of the country through the agency of the Federal Government, would undoubtedly stimulate activity elsewhere.

The plan, or something very much like it, immediately became a topic of the utmost importance when it was announced on November 21 that President-elect Hoover had placed his stamp of approval on it. The announcement was made by Governor Brewster of Maine at the Con-

ference of Governors which was holding its sessions at New Orleans. The Hoover programme, which was attributed to William T. Foster and Waddill Catchings of the Pollak Foundation, called for the creation of a \$3,000,000,000 State and Federal construction reserve fund "to do for labor and industry what the Federal Reserve has done for finance." Mr. Brewster's speech outlined the plan on the following lines: Under the scheme, public authorities would store up a reserve of construction projects equal in cost to two years' normal expenditure on improvements, and this reserve would be spent in times of unemployment. In 1928, public authorities were spending annually a billion and a half dollars on improvements. The accumulation of this amount for two years would act as the necessary reserve. The funds or a credit would be released when indexes should indicate the need. "No centralization of authority is proposed, but merely the creation of a condition by concerted action that shall make possible a remedy that will appeal persuasively to all. Follow the flow of these \$3,000,000,000 to the contractor, to the laborer, to the material men, to the factory, to the factory employees, to the merchants, to the farmer. It goes like the house that Jack built and unemployment is at an end.

"One might ask a certain number of questions: 1. How is this reserve to be built up? Does it mean that all public authorities are to stop construction for two years? 2. On what basis will periods of unemployment be determined? At the present time, no facilities exist for the registration of unemployment figures. One recalls the heated debate of the spring of 1928 when the Secretary of Labor insisted that there was no unemployment and when Democratic Senators insisted that there was. 3. Will the scheme mean concerted action by the States? Undoubtedly, the project was an ambitious one and, beyond question, there were serious difficulties in its way. As the year closed, the subject was still in a highly theoretical stage.

UNEMPLOYMENT FUND IN MEN'S CLOTHING INDUSTRY. Previous YEAR BOOKS have reported the success of the unemployment fund set up in the men's clothing industry by the employers and the Amalgamated Clothing Workers. In the Chicago district, the agreement was renewed for an additional three-year period from May 1, 1928, to May 1, 1931. The new agreement increased the employers' contribution to 3 per cent of their weekly pay rolls, while the contribution of the employee remained at 1½ per cent. It was estimated that through the increase the fund would total approximately \$1,000,000 at the end of a year. The Rochester district accepted the principle of the unemployment fund when a similar agreement was reached in April. By it, the employers contribute 1½ per cent of their weekly pay rolls and the employees make a similar contribution. However, the employers are to begin making their payments May 1, 1928, while the workers are not to start with theirs until a year later. The agreement carries a three-year term.

Similar action was taken by the employers in the New York district when an agreement between the New York Clothing Manufacturers' Exchange and the union was reached in June. The agreement was to hold from June 30, 1928, to June 30, 1931. Certain differences between the fund governing the New York district and those

of the Chicago and Rochester districts were to be noted. The employees were not to contribute toward the maintenance of the unemployment fund, but the total contributions were to come from the employers on the basis of a weekly contribution of $1\frac{1}{2}$ per cent of the total labor cost of all clothing manufactured whether by inside shops or outside shops. The fund was to be administered by a board of trustees made up of equal representatives of the employers and the union and headed by the impartial chairman of the industry for New York. Contributions were to begin Sept. 1, 1928, but unemployment benefits were not to be paid out before Sept. 1, 1929.

EMPLOYMENT AGENCIES. The United States Supreme Court, in a decision of May 28, found unconstitutional the law of New Jersey which endeavored to permit the State commissioner of labor to fix the fees charged by employment agencies. Mr. Justice Sutherland, who wrote the majority opinion in which five other justices concurred, found the law in violation of the due-process clause of the Fourteenth Amendment, in that the State was interfering with the conduct of a private business. The dissenting opinion was written by Mr. Justice Stone and was concurred in by Mr. Justice Holmes and Mr. Justice Brandeis. In view of the fact that there do not exist public employment exchanges, the decision of the Court was of the utmost significance. The *Monthly Labor Review*, in commenting on the decision pointed out that: The following States fix the fees to be charged by employment agencies: Arkansas, Colorado, District of Columbia, Illinois, Kansas, Maine, Missouri, Montana, Texas, Virginia, and Wyoming. The following States limit the fees to a percentage of the wages to be received: Connecticut, Iowa, Michigan, Nebraska, New York, North Carolina, Oklahoma, Oregon, Utah, Rhode Island. The following States require the filing or approval of schedules or both by State officials: California, Indiana, Minnesota, New Jersey, Ohio, Pennsylvania, South Dakota, Wisconsin. The *Monthly Labor Review* said further:

Because the United States Supreme Court has decided that the State may license and regulate private employment agencies and because the limitations on these decisions are that the State can not prohibit the business entirely nor can it fix the fees to be collected by the agency, all reasonable requirements for the licensing and continuation of the existence of the license may be required as long as the agency is permitted to exist and fix its own fees. . . . The States may make reasonable requirements so strict that only the honest and scrupulous can continue to carry on the business within the borders of the State.

TRADE UNIONS. It has been indicated here that the only method that will adequately cope with the problems of unemployment is some nation-wide scheme of unemployment insurance. There have been noted from time to time in these columns the various expedients being adopted for the solution of particular group problems. Trade unions, for example, have devised certain ways of coping with the evils of unemployment, as far as their own members are affected, naturally. For instance, a writer in the *Monthly Labor Review* points out, the following means for the prevention of unemployment are in general practice: membership in trade unions is restricted where unemployment prevails or the industry is overmanned; the Amalgamated Clothing Workers Union has succeeded in convincing employers that workers have a stake in their jobs and that therefore they are entitled to

indemnification when they are persuaded to leave the industry because their jobs have been eliminated because of machinery improvement; restriction of apprentices; equal distribution of all work available among all employees; the limitation of overtime; some unions operate their own employment exchanges and, where closed shops are recognized, agreements are often made with employers for the union to supply new workers. The same writer points out that the following methods are being employed for the relief of unemployment: the payment of benefits by a great number of local unions though the payments are generally small, the waiting period is quite long and the total sum is inadequate; exemption from dues is a practice more or less generally observed; some unions make loans to members out of jobs; some unions have started the machinery for the creation of unemployment insurance funds supported by the unions and the industries.

The unemployment plan of the Amalgamated Clothing Workers has been discussed here before. In the Chicago market, from May 1, 1923, to Oct. 8, 1927 the unemployment fund had collected contributions totaling \$3,878,956 and had paid out benefits totaling \$2,946,965. Some attempts were made in the women's garment industry in New York and Chicago for the creation of similar machinery and, in fact, in New York a plan had already been accepted by the employers in 1924 when internal dissension in the union put the whole scheme into abeyance; the fund, however, was to be resumed in July, 1928. A similar scheme was set up in the cloth hat and cap industry and was in operation in St. Paul, New York, Chicago, Philadelphia, Boston, Baltimore, Scranton, and Milwaukee. During the two years 1925-27, members received \$175,907 in benefits. The felt-hat workers of New York induced their employers to set up a scheme of the same character in their industry. It should be noted that in both the cloth-hat and felt-hat industries, the fund was built up entirely from employer contributions.

GREAT BRITAIN. On April 19 there went into effect the new British unemployment insurance act. The following is the new schedule of weekly contributions:

Sex and age	Employer's contribution	Employee's contribution	Government's contribution	Total
	Pence	Pence	Pence	Pence
Men aged 18 to 65	8	7	6	21
Women aged 18 to 65	7	6	4½	17½
Boys aged 16 and 17	4	3½	3	10½
Girls aged 16 and 17	3½	3	2½	8½

The new weekly benefits were to be as follows:

	Shillings
Men aged 18 to 65	17
Women aged 18 to 65	15
Boys aged 16 and 17	6
Girls aged 16 and 17	5
Dependents' benefit:	
For an adult dependent	7
For a dependent child	2

The additional grant for an adult dependent includes wives wholly dependent upon their husbands, dependent husbands physically or mentally incapable of self-support, widowed mothers, widowed stepmothers living with the claimant and totally dependent upon him. The additional

UNEMPLOYMENT IN EUROPE TOWARD CLOSE OF 1925, 1926, AND 1927

<i>Country and class of unemployed</i>	<i>Month</i>	<i>1925</i>	<i>1926</i>	<i>1927</i>
Austria (persons in receipt of benefit)	December	207,834	205,350	181,117
Belgium (members of unemployment insurance societies): Number	November	13,513	8,217	8,442
Czechoslovakia (persons in receipt of benefit): Number	October		35,948	8,677
Denmark (trade-unionists): Number	December	85,944	88,854	...
Estonia (persons registered)	November	4,607	4,157	4,940
Finland (persons registered)	do	3,604	2,330	2,449
France (persons in receipt of benefit)	December	645	17,178	11,267
Germany:				
Trade-unionists—Number	November	394,096	484,978	294,413
Persons in receipt of benefit	December	1,498,681	1,748,597	830,586
Hungary (trade-unionists)	November	27,488	18,576	11,063
Irish Free State (compulsorily insured persons): Number	do		26,984	25,586
Italy (persons registered as totally unemployed)				
Latvia (persons registered)	do	112,059	148,821	375,734
Netherlands (members of unemployment insurance societies): Number	do	3,672	5,149	5,083
Norway:				
Trade-unionists—Number	do	26,859	25,396	29,759
Persons registered	do	7,284	...	...
Poland (persons registered)	December	26,276	30,558	28,532
Sweden (trade-unionists): Number	do	311,090	190,140	160,440
Switzerland (persons registered)	November	27,428	34,200	...
United Kingdom (persons compulsorily insured): Number	do	15,760	16,366	12,079
	December	1,243,087	1,431,840	1,194,305

grant for dependent children includes children under 14, children between 14 and 15 who are school attendants, as well as stepchildren and illegitimate children.

EUROPE. Figures published by the *Monthly Labor Review* indicated that the unemployment situations in European countries were considerably improved in 1927, as compared with the two previous years. At any rate this was true for every country but Italy. It should be noted in the examination of these figures that they are in no particular case complete; the methods of their compilation are the same for the individual country, so that the figures for one year may be compared with those of other years. In short, they are useful in indicating whether or not unemployment in the particular country is on the decrease or increase. The figures are in most instances for the month of December. Note the decreases in unemployment over 1925-27 for Austria (13 per cent), Poland (48 per cent), Germany over 1926-27 (53 per cent), and France (35 per cent). Note Italy's increase of 235 per cent.

CANADA. In a report submitted to the Canadian Parliament by committee of the lower house, it was concluded that some time in the near future some system of unemployment insurance would be necessary to cope with the problems being presented. The committee underwrote a scheme of insurance based on compulsory contributions from the State, employers, and workers. As is the case in the United States, responsibility for the initiation of such projects resides in the provinces, but the Federal Government can go far in furthering the scheme by offers of Federal subsidies. It will be recalled that this was exactly the procedure followed in giving Canada a system of old-age pensions. (See OLD-AGE PENSIONS.) The committee found a difficulty familiar to students considering the problem in the United States, the lack of adequate unemployment statistics. It therefore further recommended that the Government take steps for the installation of a machinery for the measurement of unemployment.

QUEENSLAND. This state in 1922 placed on its statute books an unemployment insurance act by which a fund was to be built up through an equal contribution of 9d. weekly from the state,

the employer, and the employee. All workers, who had contributed to the fund for six months were entitled to a sustenance allowance after a waiting time of 14 days. No allowance was to be for more than 15 weeks in the year. During the year ending June 30, 1927, a total of £360,958 was paid out in allowances. Of the 45,594 males and 3386 females who made applications for the allowances during the year, refusals were made in the cases of 10,040 largely because of the inadequacy of the waiting time. Laborers predominated and the sugar industry appeared to be the chief source of continued unemployment.

ITALY. A decree signed in the spring made it compulsory for all unemployed to register at their district unemployment exchanges. Employers must choose persons from the registry lists and are to give preference to members of the National Fascist party and the Fascist trade unions. Employers must report to the labor exchanges the names of all new workers hired and those dismissed.

UNION COLLEGE. A non-sectarian college for men at Schenectady, N. Y., founded in 1795. The 1928 autumn enrollment of regular students totaled 823, distributed as follows: Academic, 563; electrical engineering, 104; civil engineering, 105; chemical, 34; physical, 17. In addition, there were 76 graduate students; and 300 enrolled in extension courses. There were 77 members on the faculty. The library contained 71,000 volumes. The productive funds amounted to \$4,000,000, an increase of \$500,000 over the previous year, and the income for the year was \$1,000,000. President Charles Alexander Richmond, LL.D., resigned on Sept. 24, 1928, after 20 years of continuous service, and Frank Parker Day, LL.D., formerly lecturer in advanced English at Swarthmore College, was elected to succeed him.

UNITARIAN CHURCH. A denomination believing in one God in one person, and consequently, in the purely human personality of Jesus. Unitarianism as a type of belief is ancient. The Unitarian Church in the United States developed as a modification of Congregationalism in New England, which led to the formation of the American Unitarian Association in 1825. This association is the executive organization of the Unitarian churches today. Each church is an independent congregation, and the denomina-

tion requires no adherence to a formal creed in its worshipers, and no profession of a particular doctrine in its ministers.

The one hundred and third annual meeting of the American Unitarian Association was held at Tremont Temple, Boston, Mass., May 22, 1928. On Jan. 1, 1928, the denomination had 422 churches, 386 of which were active. The Unitarian constituency was reported to number 131,912. There were 3273 Sunday-school officers and teachers, and 21,526 pupils. Receipts for current church activities, as presented in the treasurer's statement for 1928, amounted to \$367,527. General denominational work is carried on by departments, of which the chief are those of publication, religious education, church extension, social relations, new Americans, foreign relations, and recruiting the ministry. The church sponsors three theological seminaries: Harvard Divinity School; Meadville Theological School, Chicago, Ill.; and Pacific Unitarian School for the Ministry, Berkeley, Calif. Missionary work of the department of new Americans was carried on among American citizens and residents of Icelandic, Finnish, and Norwegian origin, in particular. The department of foreign relations kept in communication with groups holding similar beliefs in other parts of the world. Denominational publications are the *Christian Register* (weekly); the *Beacon* (weekly); and the *Unitarian Word and Work* (monthly). The Association has its headquarters at 25 Beacon Street, Boston, Mass. Its president in 1928 was the Rev. Louis C. Cornish; secretary, Parker C. Marean; treasurer, Henry H. Fuller.

UNITAS FRATRUM. See MORAVIANS.

UNITED BRETHREN IN CHRIST. A denomination which resulted from the religious awakening of Philip William Otterbein, Martin Boehm, and their co-workers. The church had its beginning at a "great meeting" held about 1766 in the Isaac Long barn near Lancaster, Pa. The first conference was held in Baltimore, Md., in 1789, and the church was formally organized in Frederick Co., Md., in 1800. Its theology is Arminian and baptism is administered by any mode desired by the applicant, while its beliefs are those of the earlier evangelical denominations. The church is divided into 35 annual conferences, including those in China, Japan, the Philippines, Porto Rico, and West Africa. In 1928 there were 1756 charges; 3071 organized churches; 1647 itinerant ministers; 406,678 church members, or a gain of 5125 over 1927; 2882 Sunday schools, with an enrollment of 387,348, including teachers and officers. The amount raised by the church for all purposes in 1928 was \$6,789,435, and the church buildings valuation amounted to \$28,754,501. Conference missionary appropriations amounted to \$107,801, the general home missionary appropriations to \$185,299, a gain of \$22,147 in the latter item. The church maintains the following educational institutions: Bonebrake Seminary, Dayton, Ohio; Otterbein College, Westerville, Ohio; Lebanon Valley College, Annville, Pa.; Indiana Central College, Indianapolis, Ind.; York College, York, Nebr.; Kansas City University, Kansas City, Kans.; Shenandoah College, Dayton, Va.; and Philomath College, Philomath, Oreg. Homes and orphanages maintained are Otterbein Home, Lebanon, Ohio; United Brethren Orphanage and Home, Quincy, Pa.; The Colonel R. M. Baker Home for Retired Ministers, Puente, Calif. The

United Brethren Publishing House (The Otterbein Press), and the headquarters of the church are located at Dayton, Ohio. *The Religious Telescope* is the official paper of the church, and *The Watchword* the young people's paper.

The General Conference of the Church of the United Brethren of Christ, a quadrennial session, was scheduled to convene in the Covenant Church, Lancaster, Pa., May 14, 1929. At the meeting of the Federation of Churches in Rochester, N. Y., in December, 1928, representatives of the Evangelical Synod of North America, the Reformed Church in the United States, and the United Brethren, met to consider the general problem of Church union, a step which would mean a denomination of more than a million members.

UNITED CHURCH OF CANADA. See CANADA, UNITED CHURCH OF.

UNITED METHODIST CHURCH. See METHODISTS, WESLEYAN.

UNITED MINE WORKERS. See STRIKES AND LOCKOUTS.

UNITED PRESBYTERIAN CHURCH. See PRESBYTERIAN CHURCH, UNITED.

UNITED STATES. AREA AND POPULATION. The area of the United States, exclusive of Alaska, is 3,026,789 square miles. The area of the non-contiguous lands, which include Alaska, Guam, and certain Pacific islands, Hawaii, the Panama Canal Zone, the Philippine Islands, Porto Rico, American Samoa, and the Virgin Islands (American), is 711,582 square miles, making a total area of 3,738,371 square miles. The estimated population of the United States on July 1, 1928, was 120,013,000. The population, according to the census of 1920, was 106,418,175. This does not include the population of the territorial possessions.

AGRICULTURE. The principal crops of 1928 exceeded those of 1927 by about 3 per cent, according to the estimates of the Department of Agriculture, in the total quantity produced and were less than those of 1927 by approximately 1 per cent in total value. The total acreage to crops was, for 1928, 360,979,020; for 1927, 357,186,100. The total value of 56 chief crops, as calculated upon prices of December 1, was estimated for 1928 at \$8,472,827,000, as compared with \$8,538,183,000 for 1927. The increase of about 1 per cent in acreage was the first material increase in a number of years. The change in acreage in 1927, from 1926, having been slight and the previous tendency having been toward smaller yearly acreage totals. By leading crops, pronounced changes in production were few. There was a falling off from the exceptionally high 1927 hay production of 123,327,000 tons, to a 1928 production of 105,953,000 tons. The potato crop was extraordinarily large, totaling an estimated 462,943,000 bushels, and thus exceeding the memorable crop of 421,585,000 bushels gathered in 1924. The crop was produced on an increased acreage, and was in part likewise due to an exceptionally high yield to the acre. The abundance of potatoes depressed the price to an average farm figure of 54 cents a bushel for the entire country, with the result that the total value of the potato crop, \$250,043,000, was the lowest in a number of years.

Fairly in line with the corresponding crops of the 1927 season were the 1928 crops of corn, 2,839,959,000 bushels, \$2,132,991,000; wheat, 902,747,000 bushels, \$877,793,000 the latter fig-

ure, however, being distinctly lower than that for 1927, owing to a lower average farm price for wheat. The cotton crop was materially higher than that of 1927, chiefly by reason of a higher acreage, but was lower in farm price and but slightly different in farm value. The cotton acreage of 1928 was 45,326,000; production, 14,373,000 bales; value, \$1,291,589,00. By States, the 1928 corn crop was poor in Texas, the wheat production exceptionally high in Kansas, oat production unusually high in Iowa, Illinois, and Minnesota. See AGRICULTURE, and articles on the separate crops, as CORN, WHEAT, ETC.

INDUSTRY AND COMMERCE. Activity in both commerce and industry in the course of 1928 was with few exceptions well maintained within the United States, and influences bearing upon it were mainly stimulating. The chief of the influences having to do with business activity were the national election, the enactments of the Congress, a very sanguine speculation for the rise in corporation stocks, and the settlement of labor difficulties in the coal fields. To the contrary of frequent experience in foregoing presidential years, uncertainty as to the result of the national election had no perceptible depressing effect on production or trade. A widespread anticipation prevailed that Herbert Hoover, the Republican candidate, would become President, and that in any case the Republican party would make considerable gains in the Senate elections, so that control of national affairs would remain, as actually happened, in the hands of the political group already controlling them.

The progress of an unprecedented upward movement in stocks had some adverse effect in that there was diverted into stock speculation, by various indirect channels, money that would otherwise have been available to serve the credit needs of commerce. This influence was probably more than offset by the sentiment of optimism generated by a demonstration of confidence, given through the stock market, in the earning prospects of American companies, and by the creation of large profits to speculators, which became available in some degree for commercial purchases.

The course of wholesale prices during the year was not conspicuously in either direction. For November, 1928, the price level of all leading commodities, after earlier minor fluctuations, stood at the same level as it had stood for November, 1927, namely, 96.7 per cent of parity with the average level for the year 1926. Increases during 1928 in prices among the metals, metal products, and building materials and to a smaller extent among hides, leather products and fuels, were counteracted by decreases in prices for farm products, foods, textiles, chemicals, and house furnishings. The volume of domestic business as expressed by car loadings was inferior to that of 1927, for the first half of the year, and superior for the second half, month by month, with the exception of a slight inferiority for August of 1928. The volume of car loadings, month by month, was more nearly even in 1928 than in 1927. Car loadings for the 52 weeks of 1928 were 51,576,731, according to the American Railway Association, as against 51,635,806 for the corresponding period of 1927 and 53,098,819 for that of 1926.

The volume of industrial activity in 1928, as estimated by R. M. Davis of the McGraw-Hill Publishing Company, was 7 per cent higher than

for 1927 and 9 per cent above 1926. According to some observers, a somewhat extensive although gradual invasion of the transportation field by motor transportation made comparative railroad freight-car loadings a not wholly accurate guide to comparisons of amounts of goods moved in different years. In contrast to the case of 1927, industrial activity in 1928 was well maintained toward the close of the year. Among the most conspicuously active industries in 1928 were the automobile, metal, and rubber industries. The lumber industry and, up to the last quarter of 1928, the textiles, were less active than in 1927.

The distribution of goods was considerably favored by improvement in the economic situation of a number of the Northwestern farming States. These had made good crops at fair prices in 1927 and the crop results of 1928 on the whole advanced agricultural prosperity. The total value of the 1928 agricultural products as estimated by the Department of Agriculture was but \$66,511,000 below that of the 1927 total, and exceeded the total for 1926 by \$662,572,000. Its purchasing power was therefore high by the standard of years subsequent to 1920.

The settlement of labor difficulties in the bituminous coal fields came somewhat late in 1928 to affect the distribution of goods, but was nevertheless a favorable influence. The United Mine Workers made the decision as early as July to cease the effort to maintain wages at the level of the Jacksonville Agreement, but the ensuing wage settlements in the divers unionized soft coal fields were not all attained until some months later. Their effect was to reduce acute unemployment in areas where the miners had stood out, and thus to restore the retail demand in the sections affected. With regard to employment in general, there occurred no other very sudden or striking amendment in the situation, but it was notable that the end of 1928 did not bring a renewal of the complaint of widespread unemployment heard in 1927. Among the most increasingly active of the distributors were the chain stores, of whom a group of 21 leaders reported in the first 11 months of 1928 total sales of \$871,903,434, or 15 per cent more than for the corresponding period of 1927. The mail order merchants likewise maintained a high level of activity, as a whole.

FOREIGN TRADE. The total value of exports for the calendar year 1928 rose sharply to \$5,129,132,000, as against \$4,864,805,773, for 1927. The imports of the United States on the other hand declined to \$4,089,930,000 for 1928, from \$4,184,378,182. There thus resulted an increase in the excess of a year's exports to \$1,039,202,000 for 1928, as compared with an excess of \$680,427,581 for 1927. Export excess thus exceeded \$1,000,000,000 a year for the first time since 1921. The 1928 total of exports was the largest since 1920; the import total, the smallest since 1923. The export total was made up in considerable part of automobiles and related goods, which formed about one-tenth of the 1928 total. Industrial machinery, agricultural machinery and implements and various iron and steel products made up approximately another tenth of the total. In the order of their importance as to total value, the chief imports into the United States were raw silk, coffee, crude rubber, cane sugar, hides and skins, and newsprint paper. Continued depression in the prices of rubber and cane sugar was among the influences that brought about a

low import total. The year in foreign trade was abnormal in that, while accumulating a larger favorable trade balance than had been attained in a number of years, the United States nevertheless ceased to draw gold from other countries on balance and actually exported in the course of the twelvemonth \$391,872,000 more of gold than it received. The outflow of gold occurred chiefly during the earlier months of the year, and was succeeded in the closing months by a renewal of gold arrivals on balance from foreign countries.

The Division of Statistical Research of the Department of Commerce estimated that approximately one-eighth of the product of the farms of the United States and one-eleventh of that of its factories were sold abroad in the fiscal year 1927-1928. The increase in value of exports, as scaled to offset the higher level of prices was found to be about 70 per cent over the corresponding total for the average year of the five-year period immediately preceding the War in Europe. Finished manufactures were reported as making up 43.2 per cent of the export total, by value, of the fiscal year 1927-28.

SHIPPING. For statistics and other information in respect to the shipping of the United States during the year, see articles SHIPPING and SHIPBUILDING.

MANUFACTURES. All the leading manufacturing industries are discussed under separate articles, such as AUTOMOBILES, BOOTS AND SHOES; IRON AND STEEL; PAPER; RUBBER; SILK; TEXTILE MANUFACTURING; ELECTRICAL INDUSTRIES; etc. For engineering works see under BRIDGES; CANALS; PORTS AND HARBORS; SHIPBUILDING; etc. See also CHEMISTRY, INDUSTRIAL.

Manufacturing in 1927, as determined by the biennial census of the Department of Commerce, attained the totals presented in the table on page 766 summarizing the more important groups of industries.

MINERAL PRODUCTION. The article MINERAL PRODUCTION AND RESOURCES gives the latest available official figures for mineral production in the United States. The more important minerals mined in the United States are treated in separate articles. There are also paragraphs on mineral production in the articles on the individual States.

FINANCE. For a discussion of Federal finances during 1928, see the article PUBLIC FINANCE.

EDUCATION. See the articles on EDUCATION IN THE UNITED STATES AND UNIVERSITIES AND COLLEGES. Separate articles on the most important universities and colleges are also given under their respective titles. Sections on Education are included in the articles on the several States.

RELIGION. A Federal Census of religious bodies in the United States, made public in September, 1928, indicated that 213 listed religious bodies in the country had, in 1926, 54,624,976 individual members, and possessed 231,983 buildings devoted to worship. The corresponding figures for 1916 were 200 denominations, 226,718 places of worship and 41,926,854 members. The apparent gain of 12,698,122 members in the aggregate total was affected by the reported change in the manner of counting Jewish worshipers, the figures for the year 1926 including numbers classed as seat holders and contributors only; the total of those of the Jewish faith as reckoned in 1926 was more than 3,700,000 above the total for 1916, and was about eleven times the earlier total.

Leading denominations and their memberships were stated to be as follows:

	1926	1916
Roman Catholic	18,605,008	15,721,815
Lutherans (21 bodies)	5,258,728	2,467,538
Baptists (18 bodies)	8,440,922	7,153,813
Presbyterians (9 bodies) ..	2,555,626	2,255,626
Methodists (19 bodies)	8,070,619	7,165,573
Jewish	4,087,357	357,135
Friends (four bodies)	110,417	112,982
Seventh-Day Adventists	110,998	78,355
Christian Church	112,795	118,737
Churches of Christ	433,714	317,937
Disciples of Christ	1,377,595	1,225,028
Greek Orthodox Church	119,495	119,871
Russian Orthodox Church ..	95,184	99,681
Protestant Episcopal	1,859,086	1,092,821
Congregational Churches	831,696	863,336
Latter-Day Saints	606,561	462,329
Unitarians	60,152	82,515
Spiritualists	50,681	29,028
Universalists	54,957	58,666
United Brethren	377,436	348,828
Moravians	31,699	26,373

Statistics and other information as to individual denominations are given in separate articles on the various religious bodies.

ARMY AND NAVY. The Army and Navy are treated separately in the articles MILITARY PROGRESS and NAVAL PROGRESS. See also article on AERONAUTICS.

VETERANS' BUREAU. Under an act of May 24, 1928, officers and former officers of the Army, Navy, and Marine Corps who had served in the War acquired equal retirement status with the officers of the regular establishments, and thus those that had incurred disabilities in the War with Germany became under certain conditions qualified to obtain a new type of benefit administered by the Veterans' Bureau. In the fiscal year 1927-28, hospitalization continued a leading activity of the Bureau. It had under treatment at the end of that year 25,899 hospital patients, as compared with 25,310 in hospital a year earlier. One-half of these, or 12,839, were hospitalized for various sorts of neuropsychiatric disability; 24 per cent, or 6273, for tuberculosis; and the remainder, 6787, for general medical or surgical ailments. The number of cases of pulmonary tuberculosis continued to decrease, while those of the psychiatric and general medical and surgical cases increased again, as in preceding years. State and civil institutions accommodated 8 per cent of the cases in hospital during the year; the special veterans' hospitals, 69 per cent; other government hospitals, 23 per cent. Admittances to hospital in the fiscal year numbered 73,270. The 50 hospitals operated by the Bureau had in operation on June 30, 1928, 22,156 beds, as compared with 20,810 beds a year earlier. Almost all the increase was devoted to neuropsychiatric cases.

Disability or death compensation claims filed with the Veterans' Bureau up to the end of the fiscal year 1927-28 totaled 1,099,803, this number being about 20 per cent of the entire number of those who had served in the armed forces of the United States in the War with Germany. There had been allowed up to that time 546,619 claims and disbursements exclusive of insurance had reached the total of \$1,249,821,507. A total of 40,904 veterans were receiving the monthly \$50 statutory award for cases of arrested tuberculosis. Compensation was being paid at the rate of \$2,542,103 in June, 1928, to dependents of 85,634 veterans who had died in actual service or of disability resulting from service.

MANUFACTURING WAGES, COSTS, AND PRODUCTION IN 1927

Industry	Year	Number of plants	Wage earners (average)	Wages	Cost of materials, fuel, power	Value of products	Value added by manufacture
All industries	{ 1927 1925 }	191,863 187,224	8,351,257 8,381,511	\$10,848,782,433 10,727,837,025	\$35,128,154,648 35,896,886,428	\$62,713,947,403 62,668,259,591	\$97,585,792,755 26,771,978,163
Food and kindred products	{ 1927 1925 }	49,736 47,947	679,158 662,010	823,387,583 791,049,484	8,113,432,583 7,709,916,601	10,999,789,550 10,373,082,162	2,883,356,987 2,663,165,561
Textiles and their products	{ 1927 1925 }	26,845 24,450	1,692,473 1,628,283	1,760,168,290 1,654,814,276	4,926,158,527 5,349,924,770	8,964,143,064 9,126,154,902	4,037,984,537 3,776,230,132
Iron and steel and their products (not including machinery)	{ 1927 1925 }	6,346 6,048	835,091 851,270	1,264,406,082 1,284,399,157	3,540,708,921 3,734,349,860	6,461,668,061 6,461,668,061	2,727,318,201 2,727,318,201
Lumber and allied products	{ 1927 1925 }	20,163 21,926	866,591 921,266	929,789,682 978,472,291	1,639,938,116 1,725,350,920	3,457,427,173 3,689,126,705	1,823,489,057 1,963,775,785
Leather and its manufactures	{ 1927 1925 }	4,263 4,243	316,421 314,025	364,229,059 355,346,411	1,087,916,992 1,012,880,605	1,868,320,020 1,763,709,361	780,403,028 750,828,756
Rubber products	{ 1927 1925 }	516 509	141,997 148,382	198,073,743 191,089,638	660,870,209 720,058,847	1,225,077,114 1,257,997,707	564,706,905 537,938,860
Paper, printing, related industries	{ 1927 1925 }	28,404 26,553	553,040 536,766	858,396,931 805,516,245	1,837,402,806 1,614,234,478	4,638,571,773 4,143,684,899	2,801,168,987 2,529,450,421
Chemicals and allied products	{ 1927 1925 }	8,939 8,871	394,817 381,075	534,947,864 506,386,054	4,061,009,903 4,184,910,627	6,404,914,348 6,438,027,055	2,343,904,445 2,253,116,428
Stone, clay, and glass products	{ 1927 1925 }	8,673 8,478	350,397 353,036	464,272,991 467,012,428	594,774,314 603,426,910	1,612,548,765 1,640,651,985	1,017,774,451 1,037,225,075
Metals and metal products, other than iron and steel	{ 1927 1925 }	6,658 6,924	270,685 275,282	380,365,227 380,781,402	1,780,958,036 1,946,777,164	2,668,696,686 2,833,769,702	888,338,650 886,992,538
Tobacco manufactures	{ 1927 1925 }	2,156 2,623	129,299 132,132	105,250,631 111,556,170	420,666,513 425,769,266	1,163,768,379 1,091,000,981	743,101,866 665,231,715
Machinery (not including transportation equipment)	{ 1927 1925 }	12,038 11,807	886,344 858,843	1,287,777,619 1,225,359,140	2,062,670,606 1,985,367,087	5,367,014,850 5,020,281,100	3,304,344,244 3,034,914,033
Musical instruments, phonographs	{ 1927 1925 }	431 461	42,985 46,980	60,761,435 62,501,341	90,158,731 98,760,497	226,362,120 231,686,552	136,203,389 132,926,055
Transportation equipment, air, land, and water	{ 1927 1925 }	2,537 2,778	494,905 559,578	803,297,856 908,487,563	2,907,949,399 3,389,101,383	4,702,378,136 5,451,753,433	1,794,428,737 2,062,652,050
Railroad repair shops	{ 1927 1925 }	2,309 2,363	428,291 457,755	648,908,452 668,191,768	545,491,754 563,645,944	1,289,695,158 1,332,679,079	744,203,404 769,033,135
Miscellaneous industries	{ 1927 1925 }	11,799 11,223	268,793 254,818	364,808,988 336,431,757	865,147,238 832,411,489	1,925,987,823 1,812,985,907	1,060,840,585 980,574,418

NOTE.—The comparability between the 1925 and the 1927 figures for cost of materials and value of products is affected somewhat by the fact that the manufacture of paper and wood pulp was treated as a single industry at the census for 1925 and as two industries at the census for 1927. The estimated market value of wood pulp made and consumed in the same establishments was not included in the cost of materials nor in the value of products of the combined paper and pulp industry for 1925, but was included in the 1927 value of products for the wood-pulp industry and in the 1927 cost of materials for the paper industry. This estimated value, as reported for 1927, was \$168,554,754.

The organization of the insurance offices of the Bureau was decentralized in the course of the year, to put policy holders in direct contact with offices in their own States with regard to all matters relating to their insurance contracts. Insurance applications in the course of the fiscal year were nearly double the number of the year previous, and totaled 187,579, aggregating \$1,028,923,938. There were in force at the end of the fiscal year 660,108 policies, amounting to \$3,111,994,905 of insurance.

The Adjusted Service Certificates issued up to June 30, 1928, numbered 3,302,667 and carried \$3,372,166,278. Loans on such certificates had been made by the Bureau, up to the end of the fiscal year, to the total of \$73,884,775. The net disbursements of the Bureau for the fiscal year 1927-28 amounted to \$439,157,199.63.

PENSIONS. The aggregate number of pensioners on the rolls of the Bureau of Pensions rose by 1252 in the course of the fiscal year ending June 30, 1928, the increase being the first in any year since 1905. The amount disbursed for pensions in the fiscal year decreased by \$1,197,040, from that of the year previous, to \$228,965,672. Pension claims on account of service in the war with Spain and the Indian wars were filed in considerable numbers under the rates fixed by the statutes of May 1, 1926, and Mar. 3, 1927. The rise in disbursements on claims of this class nearly offset the fall in the yearly total of payments to the rapidly dwindling group of the Civil War pensioners. The latter payments, for the fiscal year ending June 30, 1928, fell \$16,824,232 short of those of the year previous; Spanish War pension payments on the other hand exceeded those of the year previous by \$13,441,591, and Indian War payments advanced by \$1,943,177. Of approximately 414,000 soldiers who served in the war with Spain it was estimated that there were living 100,000 who had not yet made pension application, and that some 144,800, while on the pension rolls, were receiving less than \$50 a month each and might therefore become applicants, in most cases, for an increase.

The number of Civil War veterans receiving pensions at the end of the fiscal year 1928 was but 74,929, as against 90,000 a year earlier, and as against an estimated total of 2,213,365 who had served in the war. The number of Civil War veterans who died in the course of the fiscal year was reported as 15,237, or 17 per cent of the total of those living at the start of the year. The number of pensioned widows and dependents of Civil War veterans fell during the year to 197,934, from 212,642. The number of Spanish War soldier pensions rose from 138,812 at the outset of the fiscal year to 164,708 at its close; that of Spanish War veterans' widows, children, and dependents, from 23,547 to 26,195. Four of the veterans of the War with Mexico remained on the roll at the end of the fiscal year, out of six alive at its beginning.

Under an act of Apr. 27, 1928, inspired by the tragic loss of the crew of the submarine S-4 in December, 1927, double pension was granted in all cases arising from death or disability sustained through accident to a submarine vessel. An act of May 23, 1928, raised to \$40, from \$30, the pensions of Civil War veterans' widows of the age of 75 or over. An act of Mar. 26, 1928, entitled all veterans of the Federal Army, Naval, and Marine forces, including National Guard in Federal service, if disabled by wounds or disease and

lacking adequate means of support, to the benefits of the 10 branches of the National Home for Volunteer Soldiers.

Civil Service Retirement. The civil service retirement and disability fund, administered by the Commissioner of Pensions, stood on June 30, 1927, at \$68,336,761; it was augmented during the year by interest, transfers, and minor receipts to \$97,839,617, less \$14,761,617 paid out in allowances and annuities, and stood at \$83,078,000 on June 30, 1928. The sum of \$19,950,000, provided by act of Congress in 1928, was further to be available after the close of the fiscal year. The total of civil service annuitants on the roll on June 30, 1928, was 15,383. Of these, 3302 were receiving the maximum allowance under the law, \$999.96 a year; the average annuity was, however, much under this figure, being \$733.92. Of the annuitants, 2484 lived in the District of Columbia.

PATENTS. The number of applications for patents made to the Commissioner of Patents was higher in the fiscal year 1928 than in any previous year. Patent applications for inventions received during the year numbered 93,699, including designs and re-issues. Trade-mark and label applications numbered 23,252. Patent applications for inventions alone totaled 88,482, as compared with 84,511 for the fiscal year previous and 88,243 for the fiscal year 1922. There expired in the course of the year 33,573 patents. There were granted during the year 41,067 new patents for inventions.

POST OFFICE. The two most important occurrences of 1928 having to do with the conduct of the posts were the Federal enactment of May 29, 1928, revising postal rates and the issuance of an order on July 3 by the Interstate Commerce Commission allowing increased pay, to apply retroactively from July, 1925, to railroads for transportation of mails. Neither development affected the showing of the Post Office Department for the fiscal year ending June 30, 1928. Both applied to the fiscal year 1929. The increase in pay to the railroads for mail transportation was estimated to involve an additional yearly expenditure of about \$15,000,000 on the part of the Post Office and to create a further liability of some \$45,000,000 to meet deficiency in payments previous to the date of the order. The order directed an increase of about 15 per cent in the rates of remuneration to trunk lines transporting mail and a considerably sharper increase on the average to independent short lines. The postal-rate law of 1928 restored the 1-cent rate for private mailing cards; provided a system for the acceptance of reply cards and envelopes in the post without prepayment; made reductions in the second-class mailing rates for newspapers and periodicals sent out to the public; and reduced certain of the charges on third-class and fourth-class matter.

Deficit. Postal expenditures in the fiscal year 1928 exceeded revenues by \$32,121,096, transfer of \$15,351,321 to the Civil Service Retirement Fund being reckoned among expenditures. Disbursements for old obligations further raised the deficit to a total of \$33,363,149. The postal revenues of the fiscal year 1928 exceeded those of the year previous by \$10,511,933, and amounted to \$693,633,921. The expenditures showed a slightly greater rise, and were \$725,699,765.

Postage. Providing over 89 per cent of the revenue, the receipts of 1928 from postage total-

ed \$619,611,460. They were higher by 1.57 per cent than those of the year previous. The per capita expenditure of 1928 for postage was \$5.11. A considerable and growing part of the postage was paid without the use of stamps; the total thus paid in the year was \$88,636,582. New stamp issues of the year included a 2-cent Valley Forge commemorative issue, special-handling stamps of ten, fifteen, and twenty-cent denominations, a special surcharged Hawaiian series, and a 5-cent air mail stamp, conforming with a new minimum air mail rate.

Air Mail. In addition to inaugurating contract air mail service successfully in place of direct government service over the San Francisco-Chicago and certain other main routes, the Post Office established service on contract routes between Chicago and Cincinnati, Albany and Cleveland, New York and Atlanta, Atlanta and New Orleans, and on two routes from Dallas to Galveston and to San Antonio respectively. A number of other contracts for routes were awarded. Mail flights in the fiscal year 1928 totaled 5,585,224 miles; mail and equipment carried aggregated 1,861,800 pounds. Air mail postage was reduced to 5 cents for the first ounce and ten cents for every ounce additional. See AERONAUTICS.

Rural Mail Service. The number of rural mail routes was diminished by 442, in the course of the fiscal year, to 44,288; but the aggregate linear extent of the routes rose by 18,867 miles, to 1,289,613 miles. A consolidation of routes where practicable was in progress.

Mail Matter. In the fiscal year 1927, as reported in 1928, the post handled 26,686,555,729 pieces of domestic mail matter. These weighed 6,649,539,072 pounds. First-class mail contributed 16,283,564,220 pieces; in weight, 441,167,394 pounds. Second-class mail totaled 4,753,291,005 pieces, or 1,574,348,282 pounds; third-class, 4,061,604,835 pieces, 338,230,963 pounds; fourth-class (parcel post), 742,589,397 pieces, 4,061,911,966 pounds. Of outgoing foreign mail matter there were 356,316,608 pieces; in weight, 91,037,652 pounds.

Special Services. The postal savings system showed at the end of the fiscal year a total of \$156,329,957 held for depositors; the amount exceeded that of a year before by \$4,940,191. More domestic money orders were issued in 1928 but to a slightly lower total amount than in 1927. The number issued in the fiscal year 1928 was 197,336,882; the aggregate value, \$1,650,479,606. There were issued in the United States 2,793,593 international money orders, to a total of \$51,197,584.

DIPLOMATIC SERVICE. A few changes occurred during the year in the personnel of the American diplomatic service. William S. Culbertson, who had been Minister to Rumania, succeeded William Miller Collier as Ambassador to Chile, while another change in South America was the appointment of Alexander P. Moore, at one time Ambassador to Spain, as Ambassador to Peru, to succeed Miles Poindexter. Charles S. Wilson, who was Minister to Bulgaria, succeeded William S. Culbertson as Minister to Rumania, and H. F. Arthur Schoenfeld went to Bulgaria in his place; Jefferson Caffery, who had been Minister to Salvador, was appointed to the same position in Colombia in place of Samuel H. Piles, and was succeeded in Salvador by Warren D. Robbins. David E. Kaufman succeeded James S. Cottrell as Minister to Bolivia, and Franklin Mott Gunther filled the vacant post of minister to Egypt.

The following list gives the names of the diplomatic representatives from the United States in 1928:

EMBASSIES AND LEGATIONS OF THE UNITED STATES

Albania—Charles C. Hart, minister.
 Argentina—Robert Woods Bliss, ambassador.
 Austria—Albert Henry Washburn, minister.
 Belgium—Hugh S. Gibson, ambassador. (Also minister to Luxembourg.)
 Bolivia—David E. Kaufman, minister.
 Brazil—Edwin V. Morgan, ambassador.
 Bulgaria—H. F. Arthur Schoenfeld, minister.
 Canada—William Phillips, minister.
 Chile—William S. Culbertson, ambassador.
 China—John Van A. MacMurray, minister.
 Colombia—Jefferson Caffery, minister.
 Costa Rica—Roy T. Davis, minister.
 Cuba—Noble B. Judah, ambassador.
 Czechoslovakia—Lewis Einstein, minister.
 Denmark—H. Percival Dodge, minister.
 Dominican Republic—Evan E. Young, minister.
 Ecuador—Gerhard A. Bading, minister.
 Egypt—Franklin Mott Gunther, minister.
 Estonia—Frederick W. B. Coleman, minister. (Also to Latvia and Lithuania.)
 Ethiopia (Abyssinia)—Addison E. Southard, minister resident.
 Finland—Alfred J. Pearson, minister.
 France—Myron T. Herrick, ambassador.
 Germany—Jacob Gould Schurman, ambassador.
 Great Britain—Alanson B. Houghton, ambassador.
 Greece—Robert P. Skinner, minister.
 Guatemala—Arthur H. Geissler, minister.
 Haiti—(Vacancy) minister.
 Honduras—George T. Summerlin, minister.
 Hungary—J. Butler Wright, minister.
 Irish Free State—Frederick A. Sterling, minister.
 Italy—Henry P. Fletcher, ambassador.
 Japan—Charles MacVeagh, ambassador.
 Latvia—Frederick W. B. Coleman, minister. (Also to Estonia and Lithuania.)
 Liberia—William T. Francis, minister resident and consul-general.
 Lithuania—Frederick W. B. Coleman, minister. (Also to Estonia and Latvia.)
 Luxembourg—Hugh S. Gibson, minister. (Also Ambassador to Belgium.)
 Mexico—Dwight W. Morrow, ambassador.
 Morocco—Maxwell Blake, diplomatic agent.
 The Netherlands—Richard M. Tobin, minister.
 Nicaragua—Charles C. Eberhardt, minister.
 Norway—Laurits S. Swenson, minister.
 Panama—John Glover South, minister.
 Paraguay—George L. Creech, minister.
 Persia—Hoffman Philip, minister.
 Peru—Alexander P. Moore, ambassador.
 Poland—John B. Stetson, Jr., minister.
 Portugal—Fred Morris Dearing, minister.
 Rumania—Charles S. Wilson, minister.
 Salvador—Warren D. Robbins, minister.
 Serbs, Croats, and Slovenes, Kingdom of—John Dyneley Prince, minister.
 Siam—Harold Orville Mackenzie, minister.
 Spain—Ogden H. Hammond, ambassador.
 Sweden—Leland Harrison, minister.
 Switzerland—Hugh R. Wilson, minister.
 Turkey—Joseph C. Grew, ambassador.
 Uruguay—U. Grant-Smith, minister.
 Venezuela—Willis C. Cook, minister.

EMBASSIES AND LEGATIONS TO THE UNITED STATES

Albania—Faik Konitza, minister.
 Argentina—Dr. Don Manuel E. Malbran, ambassador.
 Austria—Edgar L. G. Prochnik, minister.
 Belgium—His Highness Prince Albert de Ligne, ambassador.
 Bolivia—Don Eduardo Diez de Medina, minister.
 Brazil—S. Gurgel do Amaral, ambassador.
 Bulgaria—Simeon Radeff, minister.
 Canada—Vincent Massey, minister.
 Chile—Don Carlos G. Dávila, ambassador.
 China—Sao-Ke Alfred Sze, minister.
 Colombia—Dr. Enrique Olaya, minister.
 Costa Rica—Don Manuel Castro Quesada, minister.
 Cuba—Don Orestes Ferrara, ambassador.
 Czechoslovakia—Ferdinand Veverka, minister.
 Denmark—Constantin Brun, minister.
 Dominican Republic—Angel Morales, minister.
 Ecuador—Don Gonzalo Zaldumbide, minister.
 Egypt—Mahmoud Samy Pasha, minister.
 Estonia—Colonel Victor Mutz, consul-general in New York, in charge of legation.
 Finland—L. Åström, minister.

France—Paul Claudel, ambassador.
 Germany—Friedrich W. von Prittwitz und Gaffron, ambassador.
 Great Britain—Sir Esme Howard, ambassador.
 Greece—Charalambos Simopoulos, minister.
 Guatemala—Dr. Don Adrian Racinos, minister.
 Haiti—Raoul Lizaire, secretary of legation and chargé d'affaires.
 Honduras—Luis Bográn, minister.
 Hungary—Count László Széchényi, minister.
 Irish Free State—Timothy A. Smiddy, minister. (Resigned, November, 1928.)
 Italy—Nobile Giacomo de Martino, ambassador.
 Japan—Katsupi Debuchi, ambassador.
 Latvia—Arthur B. Lule, consul-general in New York in charge of legation.
 Lithuania—Bronius Kasimir Balutis, minister.
 Luxemburg—Baron Raymond de Waha, chargé d'affaires.
 Mexico—Don Manuel C. Téllez, ambassador.
 Netherlands—J. H. Van Royen, minister.
 Nicaragua—Dr. Don Alejandro César, minister.
 Norway—Halvard H. Bachke, minister.
 Panama—Dr. Don Ricardo J. Alfaro, minister.
 Paraguay—Dr. Juan V. Ramirez, secretary of legation and chargé d'affaires.
 Persia—Mirza Davoud Khan Meftah, minister.
 Peru—Dr. Herman Velarde, ambassador.
 Poland—Jan Ciechanowski, minister.
 Portugal—Viscount d'Alte, minister.
 Rumania—George Cretziano, minister.
 Russia—Serge Ughet, financial attaché.
 Salvador—Dr. Don Francisco A. Lima, minister.
 Serbs, Croats, and Slovenes—Bojidar Pouritch, counselor of legation and chargé d'affaires.
 Siam—Lieut.-Gen. Phya Wittavongs, minister.
 Spain—Don Alejandro Padilla y Bell, ambassador.
 Sweden—W. Boström, minister.
 Turkey—Ahmed Mouhtar Bey, ambassador.
 Uruguay—Dr. Jacobo Varela, minister.
 Venezuela—Dr. Don Carlos F. Grisanti, minister.

ADMINISTRATION

THE PRESIDENT. President Coolidge was at variance with the Seventieth Congress at a number of points in the course of the first session. On matters of Mississippi flood prevention, farm relief legislation, naval expenditure, and the development of Muscle Shoals, he and his cabinet members received the support of an Administration group of the Republicans in Congress, but this group lacked the voting power to carry out his views. In the matter of the reduction of taxes, after having insisted on the need of a balanced budget, he finally yielded to the extent of signing a Revenue bill that left but a slight expected favorable balance for the year 1928-29, a balance which the August computations of Budget Director Lord converted into a prospective deficit of \$94,279,346.

In the matter of Mississippi flood prevention, the President yielded ground to the extent of signing a measure that did not, as he had proposed, make the States directly benefiting liable for a portion of the cost of the work, and that authorized expenditure on a greater scale than he had recommended. He vetoed in all more than a dozen measures, of which a salary increase for postal employees, involving \$6,456,000, a provision of rent, light, and fuel allowances for fourth-class postmasters, the granting of retirement pay to disabled emergency officers and the McNary-Haugen farm relief bill were important. The postal service increases and the emergency officers' pay act were passed over his veto, but the effort to re-pass the McNary-Haugen bill failed, as in 1927. The President in his message vetoing this bill scored it in language of a vigor marked with bitterness.

The meeting of the Pan-American Conference at Havana gave the occasion for President Coolidge to visit foreign territory for the first time in his tenure of the Presidency; he went to Havana and there delivered the opening address on Janu-

ary 16 to the Conference, starting back for the United States on the day following. In this address he praised the Conference as "a forum in which not the selfish interests of a few, but the general welfare of all, will be considered," and urged the observance, in the affairs of the New World, of the spirit of which "the most complete expression is the Golden Rule." He did not remain as a delegate at the Conference, Charles Evans Hughes filling the rôle of head of the United States delegation.

In an address of January 30, to the members of the budget-making group known as the Government's Business Organization, the President expressed the conviction, with regard to the Government, that "economy is here to stay," recommended a comprehensive programme for the replacement of obsolete naval vessels, and reviewed the reduction of National debt which surpluses achieved under the budget system had made possible. The visit of the aviator, Lindbergh, to Porto Rico was made the occasion of a demand from the legislature of that island in January, that it be admitted to Statehood; President Coolidge discouraged this proposal in a public letter addressed to Governor Horace M. Tower of Porto Rico, representing the condition of the island as more favorable than at any previous time in its history, its government as more liberal, and its people exercising a greater control over their own affairs.

In an address of April 15, accepting the statue of Andrew Jackson for the statutory hall in the Capitol, the President emphasized the course of Jackson in opposing the asserted right of secession in 1832, and in leaving the Treasury without obligations and with a surplus. President Coolidge delivered his Memorial Day oration at Gettysburg, and made it the occasion for a word on behalf of the negotiations with France and other nations for a treaty against war, as well as for a warning against the spread of criminality within the country.

Mr. Coolidge held himself apart from the presidential campaign, having definitely eliminated himself as a candidate by his declarations of the year previous. He made no public effort to influence the choice of his party in the presidential nomination, but passed the summer at an estate on the Brule River near Superior, Wisconsin, maintaining administrative contact through offices established at Superior. He accepted the resignation of Mr. Hoover as Secretary of Commerce on August 21 without improving the occasion to offer an extensive public endorsement such as might have served the purpose of the presidential campaign. Shortly before election day, however, he congratulated Mr. Hoover on his anticipated succession to the Presidency, in a brief but cordial personal message that was widely published.

FOREIGN RELATIONS. The chief feature of the State Department's conduct of foreign relations during the year was the negotiation of a treaty against war, signed at Paris August 27. The State Department continued to play a dominant part in the affairs of Nicaragua, where American Marines repressed insurgents while a national election was held under American control. The Nationalist Government of China was recognized, progress was made in matters under discussion with Canada, and Mexican relations continued in the harmonious state into which they had been brought in 1927 by Ambassador Morrow.

Nicaragua. Hostilities with the Sandinista in-

surgents were carried on throughout the greater part of the year, over a wide and rugged area, chiefly in the north of the country. Early in April according to news reports, troops of the Marine Corps in Nicaragua numbered about 3500 and were assisted by native auxiliaries. Engagements were on a small scale, the insurgents not attempting concentrations in any great number. Efforts on the insurgents' part were to capture towns or American plantations and mines, and to cut off detachments of the American troops, while the Marine forces sought to break up insurgent bands and to find and take their places of refuge. One of these, the summit of Chipote Mountain, was mastered in January, but its loss did not check the insurgents in other districts. Up to July 27, it was reported that about 600 of the insurgents had surrendered at one time or another. Marines extended their operations into Honduras in August, with reported consent from the Government of that country to pursuits of Sandinistas within its borders.

While this warfare was going on the State Department made arrangements to regulate the Nicaraguan election. It failed to obtain the passage in the House of Deputies at Managua of a law placing election supervision in the hands of Brigadier General Frank R. McCoy, U. S. Army. President Diaz, upon the rejection of this measure, issued, March 21, a decree according the desired authority to General McCoy. It was reported in August that the State Department had tentatively approved the placement in the United States of a Nicaraguan loan of \$12,000,000, which was not, however, taken up at that time by bankers. The Nicaraguan election was successfully held November 4, the country being under the guard of American Marines and sailors. Upon the election of Moncada, Liberal candidate, as President, a large part of the American forces were withdrawn. See NICARAGUA.

Treaty Against War. Secretary of State Kellogg had begun in 1927 his efforts to expand the Briand proposal of a treaty renouncing resort to war between France and the United States into the project of a similar treaty to include the principal powers with which the United States had relations. The principle of this extension was accepted by the French Government via Ambassador Claudel, January 4. A demonstration of friendly attitude was made shortly after this by the State Department in the notification sent to bankers that the Department would not oppose the flotation of loans to France. Such loans had previously been opposed, but the removal of official opposition did not result in any widespread French effort to borrow. The French Government while accepting the idea of a multilateral agreement against war, raised objection to the extent of the proposed pledge itself, maintaining that France being already committed by treaty obligations of defensive alliance could not undertake to abstain from any but aggressive war.

There followed a protracted exchange of views between the two capitals; a note of Foreign Secretary Briand, as reported January 21, proposed that the French Government protect its obligations by accepting the proposed treaty with reservations. This plan was not favored at Washington. In the meantime a Franco-American treaty of arbitration, strictly limited to that topic, was signed at Washington, February 6, to replace the expiring arbitration treaty. Its con-

clusion had little effect on the anti-war treaty negotiations. At the end of April, Secretary Kellogg declared that the intent in the proposed French reservations was not in his view inharmonious with the tenor of his treaty draft. The point was eventually settled by exchange of notes, France setting forth in a note the contingencies that she understood not to be covered by the treaty pledge, and the United States assenting.

Other nations were approached by the State Department, soliciting them to sign the proposed treaty. Germany, Italy, and, with reservations expressed by note, Great Britain accepted; likewise Belgium, Japan, Poland, and Czechoslovakia. At Paris on August 27, fifteen signatories subscribed to the treaty. They were the representatives of the above named powers and of France and the United States. For the chief parts of the British Empire there were seven signatories. In the treaty the nations (Article I) renounced war "as an instrument of national policy," and agreed (Article II) to settle disputes among them only by pacific means; Secretary Kellogg after the signature of the treaty by the original contracting parties sent identical notes inviting 48 other governments, Russia not included, to affix their signatures. Invitation to Russia was extended by the French Government. See KELLOGG TREATIES.

Other Foreign Relations. The Chinese Nationalist Government sent to Washington its former Foreign Minister, Chao Chu-wu, to seek to open relations with the United States Government. The Secretary of State, in response to his proposals, on July 25, sent a note through Minister MacMurray to the Nationalist Government expressing readiness to enter into negotiations on the subject of the tariff provisions in the treaties between the two countries. A treaty granting China tariff autonomy was immediately executed by MacMurray. These proceedings involved American recognition of the Nationalist Chinese Government. In April, a settlement of the Nanking affair of March, 1927, was reached, the Nationalist Government offering apology for the attack on Americans and the murder of Dr. J. E. Williams at Socony Hill, and the United States Government explaining that as its naval vessels had fired to cover the retirement of fugitives, it felt that its action on the occasion had been war-rantable. Damages and compensation to Americans were to be determined by a special commission of Americans and Chinese.

Relations with Canada during the year had to do chiefly with the diversion of water from the Great Lakes, with the project of a Great Lakes and St. Lawrence deep waterway, with measures to suppress transportation of liquor over the international border and with the status of persons crossing daily from Canada to the United States to go to employment in the latter. The Dominion renewed its representations early in the year as to the lowering of Lake levels by the diversion of water through the Chicago Drainage Canal; it accepted the finding of a joint board of engineers that the diversion there had affected the water level not more than 6 inches. Heavy rains in the summer raised the Lake levels sufficiently to deprive the subject of a degree of its formerly somewhat pressing character. Notes exchanged by the two governments, January-April, set forth numerous details of the stand of each with regard to the proposed waterway and hydroelectric installations along its course.

Accord was reached on the proposal to set the depth of channels at 27 feet instead of 25. Hugh R. Wilson, Minister to Switzerland, signed January 30 the Geneva convention on import and export restrictions.

Through the efforts of Secretary Kellogg the governments of Chile and Peru agreed July 13 to resume their mutual diplomatic relations, leaving their contentions with regard to Tacna and Arica to await later solution. Complaint that a Coast Guard cutter had violated British territorial waters by seizing suspected rum runners near Gun Key in the Bahamas in September, 1927, led the State Department to offer apology to Great Britain July 18 for the infraction. The State Department refused to interfere in the national elections of Panama, held August 5, at the request of members of the Conservative party.

INTERSTATE COMMERCE COMMISSION. On February 25, the Interstate Commerce Commission issued a decision denying to coal from more southerly points the 20-cent reduction of the rate to Great Lake ports that it had granted to Pennsylvania and Ohio coal in August, 1927. The entire course of the Commission on the Great Lakes coal rates aroused strong sectional antagonism; it led to the Senate's refusal to confirm the reappointment of Commissioner Esch. Permission was granted by the Commission May 18 for the Chesapeake and Ohio Railway Company to purchase control of the Pere Marquette, but that part of the application which sought consent to acquisition of control of the Erie system was denied. The Commission on May 18 cited the New York Central, Baltimore & Ohio, and New York, Chicago & St. Louis railroads for violating the Clayton Act in jointly buying control of the Wheeling and Lake Erie Railway Company.

The long continued proceedings as to the rates to be allowed railroads for carrying the mails were concluded July 30 by a decision of the Commission granting mail rate increases to the carriers to the aggregate of \$15,000,000 a year. A total of \$45,000,000 was further granted, to cover underpayment on the part of the Government subsequent to July, 1925. Purchase of the Kansas City, Mexico & Orient Railroad Company by the Atchison, Topeka & Santa Fe was approved by the Commission August 28. See **RAILWAYS**.

FEDERAL RADIO COMMISSION. The commission received by statute an extension of its powers to control radio broadcasting and allocate wavelengths for another year. Restrictions attached to this extension (see *Congress*, below) rendered the work exceedingly difficult. Hearings were held for many months, principles for determining cases in the matter of allocation were laid down and broadcasting licenses in great number were granted or refused. Broadcasters were carried along in the meantime on successive 30-day licenses.

FEDERAL TRADE COMMISSION. At the instance of the Senate the commission opened an investigation early in March into the activities of electric light and gas utilities and of their national associations. Evidence was brought out that tended to show that State or regional associations affiliated with the national groups had effected publicity by various means chiefly for the purpose of combating the movement for public ownership of utilities and the proposals to build great hydroelectric enterprises at public expense.

A director of an information committee in Ohio testified that the introduction of 15,000 copies of a textbook, "Aladdins of Industry," into the public schools of that State had been effected. It was testified that a proposal to issue municipal bonds in Cleveland for a municipal power plant had been opposed in 1925 with organized speakers and with matter in 625 Ohio newspapers. Records of the expenditures of similar committees in Georgia and Florida were alleged to have been destroyed. Evidence was produced to the effect that in Missouri booklets prepared by a publicity organization had been used in 690 high schools. In Nebraska, it was testified, a former member of the State Railway Commission, becoming director of the Midwestern division of the National Electric Light Association, had brought about a distribution of some 4000 textbooks in the public schools. Other testimony of like character was obtained.

SHIPPING BOARD. The Shipping Board held a conference of private operators of ships January 10 and 11 to obtain their views on the needs of private shipping. In February it submitted to Congress its recommendations for legislation; these included grants of long-term contracts at liberal figures for the transportation of foreign mails, easier terms for future loans to domestic builders and operators of ships from the construction fund, tax exemption for vessels in foreign trade, the grant of two months' pay a year to Naval Reserve officers and men serving in the American merchant marine in foreign trade, and several other proposals. The policy of selling ships into the hands of private operators was pursued; bids for purchase of the vessels of three government-owned Pacific lines were accepted February 16. The Board decided July 3 to offer for sale the United States Lines, the American Merchant Lines and the American Palmetto Line.

MISSISSIPPI RIVER FLOOD CONTROL COMMISSION. This body was created by the Flood Control Act of 1928, which specified that it should consist of three members, one the Chief of Engineers, U. S. A., one the president of the preexisting Mississippi River Commission, and the third a civilian expert appointee of the President. The new commission had for its expected function the work of bringing the plans of the old commission and those of the army engineers into harmony. The President appointed Carleton W. Sturtevant May 16 as the appointee member to the new body. Colonel Charles L. Potter, president of the old Mississippi River Commission, relinquished that post at the beginning of July, and was succeeded by General Thomas H. Jackson. Thus the latter and Maj. Gen. Edgar Jadwin became the two ex-officio members of the new commission. The three visited the scene of the proposed flood control works in July and made a report, issued August 15. This document approved the Northeastern Louisiana and Atchafalaya Basin flood diversion projects of the Jadwin report, and also favored fuse plug control of flood discharge over levees, a form of automatic control, as opposed to spillways to be opened by official authority, such as the Mississippi River Commission had favored. The report was favorable to the policy of leaving extensive overflow areas along the course of the river, on the theory that the raising of levees, alone, would not suffice to take care of flood waters.

CABINET CHANGES. Herbert Hoover, upon his nomination as Republican presidential candidate, tendered to President Coolidge on July 6 his resignation as Secretary of Commerce. After a period of seven weeks, the President on August 21 accepted the resignation, and appointed William F. Whiting, a manufacturer of Holyoke, Mass., Secretary of Commerce. Secretary of the Interior Hubert Work resigned his position in July to become the Hoover campaign manager, and on July 20, Roy O. West of Chicago, a lawyer and political party worker who had managed the finances of the Coolidge 1924 campaign, was appointed to the Interior post.

CONGRESS

SEVENTIETH CONGRESS, FIRST SESSION. On reassembling after the holiday recess, early in January, Congress had still before it almost the entirety of its session programme, although a revenue bill had been rapidly put through the House in the previous December, carrying tax reductions much beyond what the Secretary of the Treasury had submitted as the possible maximum. The Senate Finance Committee, on the suggestion of Secretary Mellon, postponed action on this measure until the end of March, when the first quarterly payment on income taxes based on incomes of 1927 might be expected to clarify tax reduction possibilities.

Composition of Congress. The Senator-elect from Illinois, Frank L. Smith, whose eligibility had been challenged at the opening of the session, was reported ineligible, January 17, by a special committee, which found that a considerable part of Smith's primary campaign fund had been contributed by utility interests. The Senate accordingly by a vote of 61 to 23 on the 19th declared the Illinois seat vacant. The vote was largely but not entirely partisan, 39 Democrats and 21 of his fellow Republicans, as well as one Farmer-Labor Senator, voting against Smith. Governor Small of Illinois declared on the following day that he regarded the Senate's course as unwarranted, and he thereafter refused to nominate a Senator for the place, which remained vacant throughout the session. The seat of Senator-elect Vare of Pennsylvania remained likewise vacant while investigations relative to his primary campaign and the Pennsylvania Senate election of 1926, contested by Wilson, the Democratic candidate, went on. There were thus 47 sitting Republican Senators, 46 Democrats and one Farmer-Laborite. In the House the contest on the eligibility of James M. Beck, Republican, was settled in his favor early in February.

Senate Resolutions and Investigations. The Senate Committee on Elections moved January 26, for a recount of election ballots cast in Philadelphia and five other urban counties of Pennsylvania, where William B. Wilson challenged the vote rendered for Vare in 1926. The U. S. Supreme Court granted, March 12, to another Senate committee, that headed by Reed of Pennsylvania and inquiring into the Vare campaign, a writ of certiorari requiring Delaware County election officials to surrender the November, 1926, ballots. The Reed committee sought to compel Sheriff Thomas W. Cunningham to disclose the source of his \$50,000 contribution of 1926 to the Vare campaign fund, and he was placed under Federal indictment on a charge of contempt of the Senate. The Reed com-

mittee in the meantime applied to the courts for an affirmation of its power to require the surrender of the Delaware County ballots of November, 1926; on appeal, the U. S. Supreme Court decided that the committee could not do this on its own authority, having received no explicit authority to that effect from the Senate.

A subcommittee of the Committee on Privileges and Elections, headed by Waterman of Colorado, sat in Philadelphia in July and obtained testimony of practices alleged to have been used by the Vare organization in the registration of voters, the printing of ballots above the required number, and the stimulation of voting by the payment of voters' poll taxes. The special committee inquiry into the Hearst documents purporting to show that several members of the Senate had been declared by Mexican officials to be amenable to bribery, which was begun in 1927, was concluded by a report delivered in January, 1928. The committee found the documents to be spurious, and to bear forged signatures of President Calles and the Secretary of the Mexican Treasury.

The Senate rejected, March 16, the President's nomination of John J. Esch to the Interstate Commerce Commission; Mr. Esch, previously a member of the Commission, was charged with having changed his vote when the Commission, after denying, granted lower rates from the northern field to coal destined to the Great Lakes. A resolution against a President's serving for a third term, offered by LaFollette of Wisconsin, and inspired by efforts to induce President Coolidge to run again for the Presidency, was adopted by the Senate February 10, by a vote of 56 to 26. The Norris resolution, also, to amend the Constitution so as to advance the date of presidential inaugurations to January 15 and the commencement of a newly elected Congress to January 2 following its election, was again passed by the Senate, by a vote of 55 to 6, on January 4. The Senate had passed it in three previous sessions, but the House on no occasion gave it the necessary favorable vote.

As in 1924, the Senate created a special committee, April 30, to investigate expenditures of candidates for the presidential nomination. This committee later obtained figures on the expenditures of all the candidates prominent as contenders for the nomination in either party. In a resolution of an unusual character, the Senate May 7 requested the U. S. Supreme Court to hear arguments to be offered by the counsel for the National Conference on Railroad Valuation, D. R. Richberg, in the O'Fallon Railroad valuation case. The move was opposed as an act of interference with the judiciary, but the resolution was carried by a vote of 46 to 31, the more radical element being in the majority.

Among new inquiries started by the Senate was that of a special committee which visited the Ohio-Pennsylvania bituminous coal-mining area, where excesses in the use of mine police and of court injunctions against coal strikers had been alleged. The committee, under Gooding of Idaho, took testimony chiefly in the Pittsburgh district in February and March, and brought to view many matters of complaint of the striking miners. Walsh of Montana moved for a Senate inquiry into the activities of public utility corporations, but the Senate, rejecting this proposal, referred the matter of inquiry

February 15 to the Federal Trade Commission. Charges made in a letter left by L. S. Peterson, a postmaster at Douglas, Ga., who died by his own hand, indicated that he had been a victim of a system of enforced contributions levied by members of the Republican organization in his State. The Senate took cognizance of the charges and created a committee which, under the chairmanship of Brookhart of Iowa, sat during the summer at Atlanta, Ga., and in several other Southern States and elicited testimony of exactions levied upon holders of postal appointments.

Revenue Legislation. While the House had passed a revenue bill in the previous December, the Senate did not take up the subject until the close of March. The Finance Committee retained the finance measure in its hands in the interim, in response to a suggestion of Secretary Mellon, proposing the delay as a means of getting further information on predicted tax receipts, through figures on the March 15 payments. Democrats on the committee sought immediate consideration of the measure on January 17, but were defeated by a strict party vote. The committee finally, April 26, reported its bill, which provided tax reductions of an estimated yearly total of \$203,865,000, as against \$289,000,000 provided in the House measure. The Senate bill as reported retained the estate tax, made the corporation income-tax cut 12½ per cent instead of 13½ per cent, made reductions in surtaxes on incomes from \$18,000 to \$70,000, removed the 3 per cent automobile tax, raised the corporate income tax exemption to \$3000, exempted from tax theatre admittances up to \$3, and made other lesser changes; it sought to make surtax reductions apply retroactively to 1927 incomes; it preserved the taxes on club dues, capital stock and produce exchanges. It differed from the House measure chiefly in allowing less reduction of corporation tax, the House having put the corporate income-tax rate at 11½ per cent. The Senate approved its committee's 12½ per cent rate by a vote of 40 to 34 May 12. On May 14 it voted the committee's cuts in surtaxes on incomes up to \$80,000, but rejected the committee's proposal that these cuts should apply to 1927 incomes. A Democratic plan of surtax revision was at the same time defeated. On the contention of Senator Norris of Nebraska that the oil scandals had rendered it advisable to have full publicity as to income-tax returns, the Senate voted May 18 for an amendment providing publicity. Continuing to vote the several features of the measure in succession, it next voted retention of the estate tax, May 19, although Administration leaders had recommended that this tax be removed. A graduated income tax on small corporations, supported by the Democratic group, had been voted into the bill May 12, with the aid of two Republicans, but was cast out again on reconsideration, May 21, chiefly on the ground that it would have reduced revenue by about \$24,000,000.

When the entire bill came before the Senate for a vote, May 21, the Democratic members voted generally against it, and a tie vote of 33 to 33 resulted. Vice President Dawes in the chair cast the deciding vote in favor of the bill. It then went to conference committee, where the compromise plan of a reduction of the corporate income tax to 12 per cent was

adopted, the Senate's surtax cut of some \$25,000,000 abandoned, and the \$3 theatre-ticket exemption accepted. As a result of opposition in the conference committee, the income-tax publicity proposal was renounced by the Senate in a vote of May 26, and the whole conference committee bill adopted by the Senate on the same day without record vote. The House concurred on the 26th. The bill as passed thus carried repeal of the 3 per cent tax on automobile manufacturers, reduction of the corporate income-tax rate to 12 per cent, and other tax changes furnishing an aggregate estimated yearly reduction of \$222,495,000 in revenue. Although this reduction exceeded the total that Secretary Mellon had indicated as the safe maximum, President Coolidge signed the measure May 30.

Mississippi Flood Control. The previously created House Committee on Flood Control, reflecting sentiment adverse to President Coolidge's recommendations of December, 1927, on the plan and financing of works to prevent inundations in the lower Mississippi Valley, reported, February 16, a bill of its own, much at variance with the Jadwin plan. This measure provided that the Federal Government should bear the entire cost of the work; contemplated expenditure of \$473,000,000 as against the Jadwin plan's \$290,400,000; proposed the creation of a Mississippi Valley Flood Control Commission of seven members to be nominated by the President and to have charge of the entire project (the membership was finally fixed at three); and empowered this commission to acquire for the Government by purchase or condemnation in the Federal courts all lands needed for floodways, spillways, and levees. In effect this last provision was taken as placing in the hands of the Federal Government not only the power but the burden of land acquisition.

In the Senate the Committee on Interstate Commerce introduced February 29 a measure occupying a middle place between the Jadwin plan and the House bill. The Senate bill indicated a total expenditure of \$325,000,000; provided a committee of three engineers, including Major General Jadwin, to deal with features of the problem; stipulated that communities must supply lands for levees before the government expended any money on levee work; and proposed that where existing levees had not yet been brought up to the stipulations of 1914 local communities should bear one-third of the cost of raising them up to that point. The committee introducing this bill had sought the opinions of divers officials, including that of Secretary of Commerce Hoover, who had, as a witness, expressed belief that the question as to States or localities sharing in the cost might be left to a commission to determine. After only brief consideration, the Senate passed its committee's flood control bill March 28 by a vote of 70 in the affirmative and no nays. Senator Jones of Washington, chairman of the committee that framed the bill, informed the Senate that the cost contemplated in the bill might be exceeded and that actual expenditure might run to \$500,000,000.

The House took up the Senate bill April 18, President Coolidge seizing the occasion to express his disapproval of the measure as "exortionate" and likely to involve expenditure of \$1,500,000,000. Madden of Illinois proposed

an amendment designed to save the Government from damage liability for a floodway in Missouri and a spillway in Louisiana, but the House rejected this amendment April 23 by 142 votes to 73. On the 24th it enacted the bill by a non-partisan vote of 254 to 91. The measure then went to conference committee, which took cognizance not only of differences between the two houses but of the President's objections. In deference to his views three amendments were made, namely: limiting Federal flood liability to lands not yet overflowed, which should become overflowed in connection with future flood work; stipulating that the Government should not have to pay for river or channel rights of way over natural floodways; and rendering the Mississippi River Commission, in place of the Flood Control Board, the agent for making reports on surveys of tributaries of the Mississippi. The House, May 8, and the Senate, May 9, approved the amended bill, which the President signed May 15. An appropriation was made separately to cover expenditures of the initial year of flood-prevention work.

Shipping. Senator Jones, chairman of the Interstate Commerce Committee, introduced in the middle of January a bill designed to regulate the policy of the Shipping Board in the sale of vessels of the government-owned merchant fleet, and to promote ship construction and operation. It forbade the Shipping Board to sell any vessel save by unanimous vote and as serving in its judgment to the upbuilding of the merchant marine—a restriction in opposition to the recommendation in the President's December message. Shipbuilding to replace units of the merchant marine was also authorized. Democrats and anti-administration Republicans combined to pass the measure January 31, by a vote of 53 to 31.

In April the House Merchant Marine Committee reported a measure of its own, which included provision for government aid to private shipowners out of a construction fund of \$250,000,000, this revolving fund to be created for the purpose. This fund was to operate somewhat in the same manner as the construction loan fund under the then existing law, but was to be more liberal, allowing loans up to three-fourths of construction cost and requiring only 3 per cent interest of the borrower. Provision was made for mail contracts that would assist ships to meet operating costs. Sale of government-owned merchant ships was made allowable by a vote of only five of the six members of the Shipping Board. The House passed the measure without roll call, the Senate adopted the modification of its ship sale restriction and the President, May 22, signed the bill. For further discussion see SHIPPING.

Disabled Emergency Officer Veterans' Pay. A measure known as the Fitzgerald Bill, which had failed of passage in the Sixty-ninth Congress, was reintroduced and was reported by the House Committee on Veterans' Legislation, January 10. It granted the standard retirement pay for disability of 30 per cent or more, incurred in line of duty, to the veteran emergency officers who had not participated in this benefit accorded to other services. The measure was estimated to provide about 75 per cent of full salary for some 1850 officers. An identical bill was introduced in the Senate by Tyson of Tennessee. Strong public support helped this legislation,

which was passed by both houses, but which President Coolidge vetoed May 22, on the score of economy. Congress was at the moment smarting under the veto of the McNary-Haugen Bill, and the Senate and the House immediately, May 23, repassed the measure by the required two-thirds majorities. New extensive hospitalization projects of the Veterans' Bureau were also authorized by law.

Postal Rate Cuts. In accordance with earlier recommendations of the Postmaster-General, a bill was introduced in the House January 13 by Griest of Pennsylvania, Chairman of the Committee on Post Offices, reducing zone rates on magazine advertising to 1.75 cents a pound in the first zone as a minimum and to correspondingly reduced rates in other zones, up to 7.75 cents in the eighth zone. The transient newspaper and magazine rate was cut to 1 cent for 2 ounces, from 2 cents; the first-class post-card rate from 2 cents for private cards, was reduced to 1; a new facility, the business reply card and envelope, at not over 2 cents over the regular rate of postage, was provided; third-class and parcel-post rates were also cut. The reductions affecting newspapers were supported by the American Newspaper Publishers' Association which had ceaselessly opposed the rate increase of 1925. The House passed the measure April 2. The Senate passed a somewhat different measure, and finally a conference measure, reducing some of the zone rates still further, to the 1920 basis, was accepted May 26 by both houses.

Muscle Shoals. A proposed joint resolution, offered in the Senate by Norris of Nebraska, providing for future Federal operation of the power plant erected at Muscle Shoals on the Tennessee River, was voted March 13 by the Senate. The House, in place of this resolution voted (May 16) the Morin Bill, providing that a \$10,000,000 government-owned corporation be created, to employ Muscle Shoals for the manufacture of fixed nitrogen to be sold for use in the compounding of fertilizers. The bill authorized the sale of surplus power, and the completion of Dam Number 2 of the Muscle Shoals project as well as of a dam some 400 miles upstream at Cove Creek in Tennessee. Fertilizer companies offered protest to the bill as injecting the Government into their business. The bill was modified in conference committee, in deference to Senate objections to government fertilizer production, so as to commit the Shoals production only to furnishing fixed nitrogen in form "immediately available and practical for use by farmers."

McKellar and Tyson of Tennessee and several other senators from Southern States opposed the bill and conducted near the end of the session a filibuster to prevent its passage. The measure nevertheless passed May 25 by a vote of 43 to 34. The President failed to sign it within the 10-day period, and it was generally supposed to have died by way of the pocket veto, but Senator Norris, its Senate proponent, maintained that the question of the validity of an unratified act of Congress, which the President had omitted to sign not between Congresses but between sessions, was under adjudication in the United States Supreme Court in the *Ocanogan Indian* case.

The Radio Board. The Senate passed February 6 the Watson Bill to extend the control over

radio broadcasting, exercised by the Federal Radio Board, for one year beyond March 15. In the House, the Committee on Merchant Marine, responsive to complaints of representatives from sections holding that they had not received their fair share of radio allotments, reported a bill requiring that wave lengths be allotted within the several States in proportion to population and area, and dividing the country into five radio zones to receive equal allocations. The House passed this measure March 12 by 236 votes to 133. Senate conferees accepted the equal allocation feature in substance, reserving for the Board the liberty to dispose as it saw fit of such wave-length allotments as any State or section might not claim, and stipulating the population basis for allocations. In this form the measure was enacted, and was signed March 23.

Farm Relief. Efforts in Congress to furnish some form of government assistance to the farming industry centred again in the McNary-Haugen Bill. This measure made its appearance in the Senate March 8, in a modified form, in which the equalization fee, although retained, was relegated to the place of an alternative to successful operation through loans and advances, to be used only in case other methods of controlling crop surplus should not suffice. The House Committee on Agriculture reported the equivalent bill March 26, after rejecting a substitute proposal, the Ketcham-Jones Bill, which provided a scheme of agricultural debentures. Chairman Haugen of the Committee pointed out that the new measure had met a number of the objections voiced by the President in regard to the predecessor measure of 1927, notably by leaving the President unrestricted in appointments to the Board. The division in both houses over the measure was very similar to that in the previous year.

The Senate on April 12, after defeating a motion to drop the equalization-fee provision, passed the bill by 53 votes to 23. Those in favor included 24 Republicans and 28 Democrats. In the House, the Administration Republicans offered strong opposition and succeeded May 2 in winning the adoption of a substitute, the Aswell Bill, by a vote of 141 to 120, in committee of the whole. On the very next day, however, the supporters of the McNary-Haugen Bill, reversing this action, enacted their measure by 204 votes to 121. Minor amendments made in conference committee were followed by repassage in both houses. The President after a week of consideration vetoed the measure in a message characterizing it with exceptional severity of language as unconstitutional, deceptive to the farmer, impractical, autocratic, and as "bureaucracy gone mad." The Senate in a vote of 50 to 31, May 25, failed of the two-thirds majority needed to enact the measure over the veto, and hope of better results in the House was abandoned.

Naval Building Programme. The House Naval Committee, in considering a bill for a Naval construction programme accorded a hearing to Secretary of the Navy Wilbur, who on January 12 asserted the need of the Government's proceeding to build in the succeeding 20 years 71 war vessels, including 15 cruisers of 10,000 tons each and many smaller cruisers; of the cost, \$740,000,000 was to be expended in eight years, as part of the 20-year programme. This, in all,

was to cost \$2,580,000,000. A strong adverse sentiment to so large a plan developed, and the committee eventually reported a bill to authorize only the construction of 15 10,000-ton cruisers and one airplane carrier at a combined estimated cost of \$274,000,000, to be completed within six years. Representative Andrew of Massachusetts, in reporting the bill, indicated that the extra cruisers were regarded as a minimum need, and were required for scouting and screening duties with the capital fleet, as well as for dispersed duties. The House passed the bill March 17, by a vote of 287 to 58, with no provision of a time limit on the construction, and with a proviso that at least half the cruisers should be constructed in government yards. With this proviso somewhat modified, the bill came out of committee May 3, in the Senate. A rider offered by Borah of Idaho, favoring a restatement and recodification of the rules and law governing the conduct of belligerents and neutrals in war at sea was rejected by the committee. The Senate later defeated the entire measure by an adverse vote of 144 to 22 on May 26.

Boulder Dam. Strenuous efforts were again made, as in the Sixty-ninth Congress, to enact legislation that would authorize Federal construction of the proposed dam on the Colorado River at Boulder Canyon. The Senate bill of Johnson of California was reported March 16, by the Irrigation Committee, with several amendments, in part conciliatory to the opposed States. One among these proposed that 37½ per cent of profits from sales of power be turned over in equal parts to the States of Arizona and Nevada. Another rendered it requisite that at least six of the seven Colorado River States ratify the compact permitting the project to go into effect. Another amendment accorded to California not more than 4,600,000 acre-feet of the entire estimated 7,500,000 acre-feet of water to be impounded. The bill was nevertheless opposed by Hayden of Arizona. It was kept from coming to a vote until the closing rush, when Hayden, with aid from several Southern members, conducted a filibuster which prevented a vote on the measure. The House had passed the equivalent measure, the Swing Bill, without roll call May 25.

Other Legislation. An Administration measure for funding the debt of the Greek Government to the United States Treasury, \$18,125,000 in all, within the term of 62 years by payments yielding the equivalent of principal and a little more than 2½ per cent compound interest, was reported, with provision for the extension at the outset of a further loan from the Treasury to Greece, of \$12,167,000 to complete the work of the Refugee Settlement Commission, but the bill did not pass.

An Alien Property measure was enacted, providing for return of property to an estimated value of \$264,609,000 seized from German nationals in the course of the War, and for financing payment of claims of American citizens against Germany to a total of about \$191,729,000, as well as for payment of not over \$100,000,000 by the United States for ships, patents, radio stations and the like seized by it but not committed to the Alien Property Custodian. By concurrent resolution, Congress late in March postponed for a year, until July 1, 1929, the date of application of national-origins quota

system of the Law of 1924, as to the enforcement of which Representative Snell, Chairman of the Rules Committee, informed the House that the Administration had found no census figures sufficient on which to base quota calculations.

All bills for a reapportionment of representation in the House failed, as in previous sessions, and the apportionment on the basis of the census of 1910 remained in force. With regard to enforcement of the Prohibition law, appropriation of \$13,000,000 was made for the Prohibition Bureau in the ensuing fiscal year, and of the \$28,640,000 appropriated for the Coast Guard about \$15,000,000, according to an unofficial estimate, was destined to meet the cost of the activities of that service in enforcement of Prohibition and Narcotic laws. Pay increases to a total of about \$20,000,000 to 135,000 government employees were enacted. An increase totaling an estimated \$20,000,000 of pensions to widows of Civil War veterans was granted. A public building plan of approximately \$265,000,000 expenditure was authorized. The sum of \$5,000,000 was appropriated to fight the ravages of the pink boll worm in the cotton area. The construction of a boulevard from Washington to Mount Vernon was authorized. Congress adjourned May 29.

The Oil Investigation. The Senate voted January 9 that its Committee on Public Lands, as provided in a motion of Norris of Nebraska, investigate matters connected with the Continental Trading Company, a Canadian Corporation, which had figured in the Teapot Dome oil lease disclosures. The committee called Robert W. Stewart, Chairman of the board of the Standard Oil Company of Indiana, alleged to have been one of the men who had taken part in a transaction by which the Continental Trading Company had purchased petroleum from the Mammoth Oil Company and had resold it at a sharp advance in price. Stewart at first refused to testify, beyond saying that he had never received any of the profits of the transaction, amounting to some \$3,000,000, nor been involved in the distribution of the money. Contempt proceedings were brought against him in the District of Columbia, and he was compelled to give further testimony. The committee meanwhile obtained records and information purporting to show that \$800,000 of the Continental deal proceeds had passed to James E. O'Neil, who had paid the sum later into the treasury of the Prairie Oil Company, with which he was connected; \$763,000 to H. M. Blackmer, sought as a witness but residing in France; and \$233,000 to Albert B. Fall. The sums had been distributed in the form of Liberty bonds.

A further sum of \$26,000 was at this time traced to the Republican National Committee as recipient, and it appeared that H. S. Osler had received \$61,000 for organizing the Continental in Canada. Neither Blackmer nor O'Neil came within subpoena jurisdiction when sought by the committee, which proceeded March 1, to examine Will H. Hays, former Postmaster-General and in 1920 chairman of the Republican National Committee, on the Sinclair contributions to the Republican National campaign fund. Hays stated that Sinclair had contributed \$260,000 in Liberty bonds in 1923, to apply to the 1920 campaign deficit of \$520,000. This was to stand as a donation only to the extent of \$75,-

000; the remainder was to be transferred indirectly. A total of \$160,000 of the bonds were, according to Hays, put in the hands of certain leading party members, who thereupon were to deliver to the National Campaign fund equal value, whether in the identical bonds or in some other medium. Hays testified that \$100,000 of the bonds were eventually returned to Sinclair. The late James A. Patten, a grain operator, testified March 8, to having played dummy donor in one case in a contribution of \$25,000 for which he received an equivalent amount in First Liberty bonds. Secretary of the Treasury Mellon testified that he had received \$50,000 from Hays in Liberty bonds late in 1923, but had not immediately been told of Hays's purpose, and that some days later, on learning this purpose, he had returned the bonds, but had later made an actual contribution of \$50,000 to the deficit.

The late John T. Pratt was named as having received \$50,000 and made contribution in his name to like amount. William M. Butler, Chairman of the Republican National Committee after Hays, testified to having refused to make under his own name a contribution of \$25,000 of someone else's money. An alleged deposit slip of Stewart's account in the Commercial National Bank of Chicago came to light, indicating that coupons on a large number of Liberty bonds had been credited to him. Finally, April 24, Stewart again appeared before the Committee, and testified that he had received from Osler, president of the Continental Trading Company, \$759,500 in Liberty bonds, but insisted that he had merely placed the bonds in the control of Roy J. Barnett, an officer of his own company. Sinclair, testifying before the Committee April 1, admitted having received \$767,000 in Continental Trading Company profits, and said that he had turned the sum over, with interest, to the Sinclair Crude Oil Purchasing Company, shortly before testifying.

A report on the investigation, written for the Committee by Senator Walsh of Montana, was rendered in the closing hours of the session; it dealt severely with the Continental deal as creating profits as to which no satisfactory evidence had been found that the companies in which the Continental participants were officers had originally been designed to share. Senator Borah sought subscriptions in March from the public for the purpose of restoring the money contributed to the Republican campaign fund by Sinclair, in the interest of the party's good name. The fund had attained about \$7000 by July 8, after which subscriptions lagged. It was announced shortly after election that subscriptions would be returned to the donors.

SEVENTIETH CONGRESS, SECOND SESSION. The two houses of Congress convened in regular session December 3. On the following day was read the Presidential Message, the last of the series of such messages from President Coolidge. It reviewed the state of the Nation, pointing out that one-third of the National debt had been paid, that the National income was estimated to exceed \$90,000,000,000 a year, that the cost of National defense had increased \$118,000,000 in the past four years, and that Veterans' Relief expenditures, standing at \$765,000,000 a year, were on the increase. The reduction of Federal taxation was declared to have stimulated business, while permitting of the prosecution of

many improvements. The President asserted, with regard to farm relief, that the Government should "aid in promoting orderly marketing and in marketing and in handling farm surpluses clearly due to weather and seasonal conditions," but reiterated his views against "putting the Government directly into business, subsidies and price fixing . . . as a substitute for private initiative." He approved of the proposal to create a Federal Farm Board with advisory powers and of a revolving fund to aid in the establishment of farm marketing agencies. A former recommendation of legislation to encourage consolidation of railroads was repeated.

No further river and harbor legislation, it was recommended, should be passed until "we could see our way out of" work already authorized, including Mississippi River flood control. Development of the Colorado River in the manner suggested by the special board considering the subject was recommended. Greater leasing authority for the Secretary of War over the Muscle Shoals property was solicited. Federal remedial legislation against the crime of lynching was favored, so far as it might be constitutionally achieved. With regard to Prohibition, the President asserted that the Government was doing all that it could for enforcement, and was "entitled to the active coöperation of the States."

In his separate budget message, President Coolidge presented a budget for the fiscal year 1930 showing estimated receipts of \$3,851,295,829, expenditures of \$3,780,719,647, and surplus of \$60,576,182. He declared that there was no further prospect of tax reduction and that a renewed increase of taxation and a curtailment of Government activities were alike out of the question. He expressed the belief that if the French debt agreement were not ratified prior to the maturity of the \$400,000,000 portion falling due on Aug. 1, 1929, receipts from the French Government under the latter head should be applied to the retirement of the United States war debt.

The Colorado River Board of engineering experts submitted to Congress a report, December 3, recommending the construction of a dam in Black Canyon, twenty miles distant from Boulder Canyon, in preference to the latter site. It proposed an undertaking to cost \$165,000,000 or somewhat more, as against the \$125,000,000 previously estimated, and including a dam 550 feet high. The House Committee on Ways and Means made preparations to hold hearings on tariff revision with a view to general revision of the tariff at a subsequent special session.

Colorado River Development. The main achievement of the session up to the close of the year was to enact a measure for developing the water resources of the Colorado River, thus disposing of a highly complicated matter that had for years stood at an impasse. The measure commonly known as the Swing-Johnson Boulder Dam bill formed the basis of the enactment, but was radically modified by amendments in the Senate, prompted by the report of the engineers' commission on the project and by need of compromise in allotment of water resources, in favor of Arizona. The measure in its final form contemplated the construction of the main dam not in Boulder Canyon but in Black Canyon.

Johnson of California brought up the bill

in the Senate December 5, as unfinished business of the previous session. The bill as it had passed the House was then substituted in chief part for the previous Senate measure. Phipps of Colorado offered an amendment to increase the appropriation to \$165,000,000, from \$125,000,000, in conformity with the engineers' recommendations, and to set aside \$25,000,000 of the total for works of flood control, chiefly around the Imperial Valley. The increase was adopted, but a further Phipps amendment to render necessary the assent of all seven of the Colorado Basin States to put the project into operation was defeated, and the earlier provision that after six months following the signing of the bill the assent of six of the States should suffice was retained. An amendment proposed by Phipps provided that the Federal Power Commission might not issue power development licenses along the Colorado River until final approval of the act, but an exception was made of licenses for power development along the Gila River, in Arizona territory.

The Senate proceeded December 12 to settle the vexed matter of the allotment of water use among the rival States. The bill followed the provision of the Colorado River compact that the three Lower Basin States should have 7,500,000 acre-feet of water among them. Of this total, California had insisted on a minimum of 4,600,000; while Arizona Senators had set 3,000,000 as the minimum for their State. The Senate by a vote of 48 to 20, with the Arizona delegation in favor and the Californians opposed, voted an amendment giving California 4,400,000 acre-feet, 2,800,000 to Arizona, and 300,000 to Nevada. Ashurst of Arizona made no headway with an attempt to gain recognition for the asserted right of his State to tax exports of its half of the water of the river. The Senate on December 14 sidetracked the issue as to whether the Government should itself build the power plant at the Colorado River, by defeating an amendment of Borah of Idaho, to render government construction mandatory. This apparently left the determination of the point ultimately in the hands of the Secretary of the Interior.

The Senate passed the measure December 11, by a vote of 64 to 11, almost evenly divided as to party. The Arizona Senators, although they had given up efforts to filibuster when the Senate adopted closure of debate in the final hours, voted against the bill. In conference committee, the House contingent accepted the Senate measure as offered. The House adopted the conference report December 18 and sent the act to the President. In Arizona, the Legislature was in special session at Phoenix, and hastened to memorialize the President, urging that the act was unconstitutional and unfair, and that he veto it. Disregarding the protest, President Coolidge signed the act December 21.

Treaty Against War. The treaty for the renunciation of war, negotiated by Secretary of State Kellogg with the chief Powers and signed at Paris August 27, came before the Senate for ratification. It went into the hands of the Committee on Foreign Relations, and with it a proposed resolution of Moses of New Hampshire, that the Senate qualify ratification by some limiting declaration of its understanding of the obligations to be assumed. The committee voted

December 18, by 14 to 2, to recommend ratification of the treaty, without proposing in its recommendation any limiting declaration. There developed an opposition between the advocates of the treaty and those of the measure for cruiser construction left unpassed by the previous session. Supporters of the naval building programme apprehended that ratification of the treaty might have the effect of checking sentiment for a larger navy. They accordingly sought to obtain prior consideration for the cruiser bill. A compromise reached by unanimous consent December 20 arranged that the cruiser bill should come up as unfinished business in legislative session at the reconvening of the Senate on January 3, and that the treaty should come up on the same day in executive session.

Other Bills. A supply bill carrying \$813,215,735 for the needs of the Treasury Department and \$303,423,434 for those of the Post Office Department was passed, after difficulties raised by the opponents of the Prohibition system. The opposition in the House pointed out that the provisions for enforcement of Prohibition amounted to only some \$32,000,000, including those for the enforcement work of the Coast Guard, and condemned the allowance as deliberately inadequate, thus virtually challenging the supporters of Prohibition to include in the Treasury allowance a larger figure. The bill none the less passed the House promptly December 7, without increase in the contested item. When it came up in the Senate, Bruce of Maryland, one of the opponents of the existing Prohibition policy, cited a declaration that Prohibition Commissioner Doran had made a few days before, to a Congress committee, to the effect that it would require \$300,000,000 a year to render his work completely effective. Bruce moved that this amount be allowed, and offered an amendment giving \$270,627,384 for the activities of the Prohibition Bureau, this being the sum that Commissioner Doran had mentioned, less the cost of Coast Guard work. The Senate avoided debate by passing the measure with this amendment, relying on the conference committee to put the figure back at its original total. This the conference committee promptly did. The bill, carrying \$13,500,000 for the Prohibition Bureau, was passed by the Senate December 17, though after considerable protest against alleged insincere or inadequate enforcement, and by a majority of but three. The House passed also, December 10, an appropriation of \$283,287,963 for the Department of the Interior.

A bill to divest prison-made goods of their immunity from exclusion by State action, and to that end relinquishing Federal control over such goods as articles of interstate commerce, was passed by the Senate December 20. Three bills to provide a country residence for the President near the capital, as suggested by President Coolidge, were offered in one House or the other.

The nomination of Roy O. West to be Secretary of the Interior was the subject of hearings before the Senate Committee on Public Lands and was opposed on the ground of his former connection with the Insull power interests. The committee voted a favorable report on West December 19.

Congress adjourned December 22 for the year-

end recess, and was to reconvene January 3, 1929.

JUDICIARY

The United States Supreme Court in a decision of March 19 upheld the consent decree entered in 1920 against five leading meat-packing companies of Chicago, under which these companies were forbidden to engage in other lines of food business, a course which wholesale grocery associations had feared as likely to bring about a food monopoly. The Supreme Court declared the right of the Attorney-General to enter into agreements for decrees of this type. On an appeal of J. W. Hampton, Jr., & Company of a case relating to Constitutional tariff powers, from the United States Court of Customs Appeals, the Supreme Court sustained the lower court's decision, and Chief Justice Taft, in an opinion, declared constitutional the provision of the Tariff Law providing for flexibility of rates through Executive action. In a Supreme Court decision of May 14, sustaining the Philippine Island Supreme Court, the Board of Control Act of the Insular Legislature was declared void; this act had decreed that power to vote government stock in the Philippine National Bank and in the National Coal Company should pass from the sole hands of the Governor-General to those of a board of three, namely the Governor-General, the president of the Philippine Senate, and the speaker of the Philippine House. In a decision of May 28 the Supreme Court held a Pennsylvania State tax on corporation profits invalid as applying to corporations only and not to partnerships and individuals.

A petition for a mandamus, brought by the American Silver Producers' Association and others, to compel the Secretary of the Treasury to purchase silver at \$1 an ounce, as the petitioners contended that the Pittman Act of 1918 provided, was denied by the District of Columbia Supreme Court June 26. At New York, the Circuit Court of Appeals upheld, February 6, the conviction of former Alien Property Custodian Thomas W. Miller on a charge of defrauding the Government. The Circuit Court of Appeals at New York on March 5 reversed the decision of the Circuit Court at Buffalo in the matter of the daily crossings of Canadians having business in the United States. It held that such persons were not immigrants nor subject to the cited portions of the Immigration Act of 1924 and rules of the Department of Labor. The Government later requested that the Court reconsider this issue as fraught with results affecting the successful enforcement of immigrant restrictions.

The Oil Cases. The chief occurrence in the courts in connection with the Fall-Sinclair-Doheny oil leases was the retrial and acquittal of Harry F. Sinclair on a charge of having conspired with Secretary of the Interior Albert B. Fall to obtain a corrupt lease of Naval Reserve oil lands. The case having come to a mistrial late in 1927 on account of the alleged shadowing of jurors by detectives working in the interest of the defendant, it was called in the District of Columbia, April 9, before Justice Jennings Bailey and a jury of the District. Testimony given in the previous trial was again presented, and Clarence C. Chase, a son-in-law of Fall, testified that he had made efforts, when Fall came under sus-

picion, to have payments from Sinclair appear to have come from another person. The defense maintained that the Sinclair payments to Fall were made for interest in the Fall ranch property in New Mexico, on the belief that it might have petroleum under it. The jury acquitted on April 21. Sinclair was declared guilty and sentenced to six months in prison, on February 21, on the secondary charge of contempt of court, having to do with the operations of detectives in following and spying upon jurymen in the course of his first trial. William J. Burns, head of the detective bureau engaged in this work, and certain subordinates were sentenced to shorter terms. All the defendants appealed.

NATIONAL ELECTION

PRIMARY CAMPAIGN. Months in advance of the National conventions of the major parties, brisk contests were carried on in either party for support in State presidential primaries on behalf of several candidates. Seventeen States held primaries for the designation of delegates to the National conventions; two, New York and Illinois, chose district delegates by primary election and delegates-at-large by convention; and the remainder named their delegates altogether at state conventions. On the Republican side, Herbert Hoover, ex-Governor Frank O. Lowden of Illinois, Senator Charles Curtis of Kansas, and Senator Frank B. Willis of Ohio, were prominently brought before the public in the pre-primary publicity, while a number of favorite sons enjoyed support each in his own State.

Opponents of Hoover in his own party made efforts to promote the causes of these favorite sons, with a view to bringing about the pledging of as many State delegations as possible, so as to prevent his early nomination in the convention. Secretary Hoover countered by means of a letter of February 12 to Colonel Thad Brown of Columbus, Ohio, presenting himself as a presidential possibility in Ohio. New Hampshire elected an uninstructed Republican delegation, and North Dakota, the other State to hold a presidential primary before April, elected a delegation solid for Lowden. The name of Hoover was presently entered also in the California, Indiana, and Maryland primary campaigns, Hoover's invasion of Willis's own State of Ohio gave rise to a strenuous contest, in which Hoover did not, indeed, himself take direct part, but in which his supporters on one side and Willis on the other were extremely active. While delivering a speech, Willis was taken ill and died suddenly March 30. Time was lacking to replace his name with another on the primary ballots and in the vote of April 24 many thousand votes were cast for him, while the Hoover delegates were elected over a disorganized opposition. In subsequent State primaries and conventions, Hoover was the dominant figure. Supporters of Lowden late in May felt this so keenly that they started organizing a "Corn Belt Committee" to influence the convention in the name of the agricultural group and thus if possible avert the Hoover nomination.

In the Democratic party the pre-convention struggle was somewhat similar. Governor Alfred E. Smith of New York, whose conflict with William G. McAdoo for the presidential nomination in 1924 had deadlocked the New York convention, stood forth as the most conspicuous presidential possibility. McAdoo did not again seek primary

support but lent his influence to aid the cause of Senator Thomas J. Walsh of Montana. Walsh, a Catholic like Smith, with a record of able service in the oil cases, was an outspoken advocate of the Eighteenth Amendment and the Volstead Law. His candidacy was pressed in Wisconsin, California, and South Dakota. The Democratic primary in McAdoo's own State of California went to Smith on May 1, rendering it apparent that he would be the dominant candidate at the nominating convention. Thereupon, much as in the Republican case, an attempt at breaking party solidarity was initiated. The California manager of Senator Reed of Missouri, one of the Democratic favorite sons, proposed to Josephus Daniels, a Southern Dry Democrat and former member of the Wilson cabinet, that a third ticket be nominated, with either Borah or Reed for President and Daniels for Vice President. Daniels rejected the proposal, and pronounced for party regularity.

NATIONAL CONVENTIONS. Republican. The Republican National Convention assembled at Kansas City, Mo., June 12. It contained a small but determined group of Lowden supporters from several of the Midwestern States, who did their utmost to block the Hoover movement. On June 13, the demonstration by which some of the Lowdenites had hoped to storm the convention was attempted. A crowd of picturesquely accoutred farmers presented themselves at the convention doors and struggled for admittance, which the guards denied them. The news accounts reckoned them as numbering hardly over 500, and their mood, while discontented, was by no means savage. The failure of their demonstration left the Lowden cause less capable of resisting the Hoover candidacy than before.

Platform. A Republican platform was adopted by the convention on June 13. It began by endorsing the record of the Coolidge administration, declaring the wisdom of Republican policies and the capacity of Republican administrations, and pledging the maintenance of the Coolidge policies. It cited the high level of wages and living, the increasing enrollment of schools and colleges, and the decrease in Federal taxation, as evidences of wise government. The Coolidge economies were stressed, as was the reduction of the National debt in the period 1921-28 under Republican National direction. The party was pledged to "such further reduction of the tax burden as the condition of the Treasury may from time to time permit." The protective tariff was asserted to be "a fundamental and essential principle of the economic life of this nation." The Tariff Act of 1922 was pictured as having "justified itself in the expansion of our foreign trade during the past five years." The "cancellation of foreign debts" was opposed and adherence to the "foreign debt policy now definitely established" was promised. The Act of Mar. 10, 1928, was stated to have solved satisfactorily the problem of the claims arising out of the War with Germany, Austria, and Hungary. Administration policies toward Mexico, Nicaragua, China, and the League of Nations were approved.

The platform promised "firm and consistent support of American persons and legitimate American interests in all parts of the world." Improvement of employment and retirement conditions in the Civil Service was recommended. The depression of agriculture was ascribed to belated readjustment following the War. Advances

made to farmers through the Federal Farm Loan system and the Intermediate Credit banks were hailed as effective aid to the farmers; likewise, the raising of tariffs on farm products under the flexible tariff provision. "Without putting the Government into business," a phrase suggesting possible allusion to the McNary-Haugen Bill, the platform favored a Federal system of organization for farm marketing. The party was declared hopeful and willing to assist in any feasible plan for the stabilization of the coal industry that would be just to miners, consumers, and producers, thus dealing with the coal-mining labor troubles that had occurred.

Declarations were made in favor of continued Federal highway appropriations; of the right of collective wage bargaining; of the lowest railroad rates allowing for maintenance and a reasonable return to investors; of promoting merchant shipbuilding under the White-Jones Act; of Mississippi River flood control; of waterways connecting the Midwest with the sea; of "further liberalizing the laws applicable to veterans' relief"; of Federal protection from exactions of the utilities; of maintaining the Federal Water Power Act. Without affirming the benefits of the Eighteenth Amendment, the platform pledged its "vigorous enforcement" as a part of the Constitution.

The fact that "any official has ever fallen" from the standard of honesty was deplored and the maintenance of honesty in the Federal employ was promised. The party undertook not to create any campaign fund deficit such as that of 1920. It proposed keeping new reclamation projects in abeyance. Restrictions on immigration were approved. The advisability of giving the President power in time of war to draft material resources, services, and essential commodities was advanced. The proposed Federal anti-lynching law was commended and efforts to shift State and local duties to the Federal Government were condemned.

Candidates. The name of Herbert Hoover was placed in nomination before the convention by Frank L. McNab of California, June 14. After other nominations had been made, a ballot was taken. It gave 837 votes for Hoover, who was thus nominated on the first ballot. Lowden obtained 74 votes, Curtis 64, Senator Watson of Indiana 45, Goff 18, Norris 24, Coolidge 17, Dawes 4, and Hughes 1. In all, 1084 votes were cast. Senator Charles Curtis of Kansas was chosen candidate for Vice President June 16. He was nominated on the first ballot, receiving 1052 votes. The remaining votes were: for Dawes, 13; Ekern, 19; MacNider, 2.

Democratic Convention. The National Convention of the Democratic party convened June 27, at Houston, Texas, in a hall specially built for the purpose. Its session was almost as brief and direct in its proceedings as the Republicans'. Claude G. Bowers, an editorial writer on the New York World, delivered the keynote address, which arraigned Republican rule in sensational terms on charges of corruption and of favoring moneyed interests.

Democratic Platform. The chief contest over the drafting of the party platform had to do with the stand to be taken on enforcement of Prohibition. It was settled by the adoption of a compromise plank, suggested by Senator Glass of Virginia, acceptable to both Wets and Drys. The platform reaffirmed devotion to Jeffersonian principles and the spirit of Woodrow Wilson and

held it the function of government to preserve equal opportunity, "so that all may share in our priceless treasures." States' rights, it was declared, should necessarily be preserved. Republican administration was condemned as leaving "agriculture prostrate, industry depressed, American shipping destroyed, workmen without employment . . . corruption unpunished." The "treasonable crimes" of cabinet ministers and the "purchase of seats" in the Senate were alleged. The party was pledged to businesslike reorganization of the Department, to eliminating duplication therein and to modernizing administrative methods. Reduction effected in expenditure under Republican rule was ascribed to the elimination of war expenditures. Democrats in Congress were represented as having sought tax reduction and Republicans as having delayed it. Further reduction was favored "of the internal taxes of the people."

A tariff programme was set forth; it proposed that the Nation's tariff policy should maintain "legitimate business and a high standard of wages," increase purchasing power by reducing monopolistic and extortionate rates, restore to its original conception the fact-finding Tariff Commission, and impose duties to "permit effective competition" and "insure against monopoly." Preservation of the Civil Service was promised. Agriculture and stock raising were represented as victims of Republicans' "unsympathetic inaction." The Republican party was said not to have redeemed its pledge of 1924 to restore equality with other industries to agriculture. Republican policy was condemned as offering the farmers only crop reduction and "continued deflation." There was declared a need of legislation "for the control and orderly handling of agricultural surpluses." The mining industry was stated to have "suffered like agriculture and from similar causes," and it was declared necessary to "remove the restrictions that destroy its prosperity."

The need of "a constructive foreign policy" was represented, and as principles of such a policy there were offered outlawry of war, "abhorrence of militarism, conquest, and imperialism," non-interference with Latin-American elections, restoration of American leadership in the movement for international understanding, "full and free coöperation" with other nations to promote peace, and termination of the practice of making executive agreements to maintain any foreign government against revolution, save as ratified by the Senate. The Naval Limitation agreement of 1921 was condemned as having "simply resulted in the destruction of our battleships." The party undertook to promote deep waterways from the Great Lakes to the Gulf and the Atlantic. Flood-control work on the Mississippi was endorsed, as were "such reclamation and irrigation projects on the Colorado River as may be found feasible." Stricter enforcement of the Federal Water Power Act was suggested. A national policy of reforestation was proposed. The Federal Road Law was endorsed. The party was represented as favoring collective labor bargaining, the exemption of labor from anti-trust laws, and plans to restrict the issue of injunctions against labor groups. Unemployment, found to be "widespread and increasing," was held to justify public appropriations for necessary construction, to be made while unemployment prevailed, "A living wage" and accident compensation for government employees were advocated. Continued



Photograph by Pach Bros.

HERBERT HOOVER

ELECTED PRESIDENT OF THE UNITED STATES, 1928

aid to veterans was pledged. The platform favored "equal wage for equal service" for women. Immigrant limitation was declared necessary, but the separation of families condemned. Government control of radio in contravention of the right of free speech was disapproved. "Constructive legislation" to correct demoralization in the bituminous coal industry was proposed. The party favored fixing the date for convening Congress "immediately after the biennial National election." The pledge of enforcement of prohibition was as follows:

Speaking for the national Democracy, this convention pledges the party and its nominees to an honest effort to enforce the Eighteenth amendment and all other provisions of the Federal Constitution and all laws enacted pursuant thereto.

A pledge of monthly financial statements from the party during the campaign was made. It was asserted that the Government should continue to operate ship lines that could not be transferred to private enterprise. Efforts were demanded on behalf of the Armenian people. The country was described as "becoming controlled by trusts and sinister monopolies," so as to require the strict enforcement of the anti-trust laws and possible further enactments. It was declared "our liberty and our duty" to grant immediate independence to the Philippines. Enlargement of the Bureau of Public Health was pledged.

Candidates. The Houston convention nominated Governor Alfred E. Smith of New York as the party's candidate for President June 28 on the first ballot. Franklin D. Roosevelt of New York made the nominating speech. Twelve other names were placed in nomination. The single ballot taken gave Smith 724 $\frac{2}{3}$ votes; Reed of Missouri, 48; George of Georgia, 52 $\frac{1}{2}$; Hull of Tennessee, 71 $\frac{1}{2}$; scattering, 203. Smith's vote fell short of the necessary two-thirds prescribed by the party rule. Accordingly the Ohio delegation, which had voted almost solidly for Pomerene of Ohio, shifted its entire vote to Smith before the ballot was declared ended. Several other delegations thereupon swung largely or wholly to the Smith column. The ballot as thus altered gave Smith 849 $\frac{2}{3}$. Senator Joseph T. Robinson of Arkansas was selected as candidate for Vice President June 29 on the first ballot.

THE HOOVER CAMPAIGN. Secretary Hoover left his duties at Washington July 14 and proceeded to Palo Alto, California. He there received formal notification of his nomination at a gathering in the Stanford Bowl, August 11. In his speech of acceptance, he pictured the material progress and condition of the country, citing statistical data as showing its general prosperity. He spoke of the abolition of poverty as "one of the oldest and perhaps the noblest of human ambitions," and declared America nearer the fulfillment of this ambition than any country had ever come before. The problem of agricultural depression, he asserted, must be solved, and he pronounced "an adequate tariff the foundation of farm relief." He recommended inland waterways as bound to raise the farm price of export products and cited the Republican pledge to reorganize the farm marketing system and create a Federal Farm Board with resources to build up farmer-controlled stabilization corporations. He accepted fully the Republican tariff principles and, save for the new quota basis, the immigration laws. He proposed repealing the provision for a new

quota basis. He praised American labor for "our freedom from foreign social and economic diseases." The time had arrived, he said, "when we must undertake a larger-visioned development of our water resources." Projects of various sorts that he had in mind would, he said, require the expenditure of over \$1,000,000,000 in the next four years. As to prohibition, he repeated an earlier statement, as follows:

I do not favor the repeal of the Eighteenth Amendment. I stand for the efficient enforcement of the laws enacted thereunder. Whoever is chosen President has under his oath the solemn duty to pursue this course.

Our country has deliberately undertaken a great social and economic experiment, noble in motive and far-reaching in purpose. It must be worked out constructively.

He recommended the close coöperation of government and business and defended large business, saying: "Our people know that the production and distribution of goods on a large scale is not wrong." He condemned corruption "participated in by individual officials and members of both parties," and characterized dishonesty in government as treason to the State. He promised a foreign policy directed primarily toward peace.

Mr. Hoover delivered, in all, seven major addresses in the course of the campaign, to his opponent's sixteen. The seven were broadcast by a chain of radio stations transmitting them to all parts of the country. At Los Angeles on August 17, he treated the Boulder Dam proposal as involving the welfare of all the people in the Colorado Basin States, and as a problem that must be solved in the interest of all of them. His address was interpreted in California as favorable to California interests. In Newark, N. J., September 17, he represented the tariff and immigration policies as beneficial to labor. He attacked Democratic tariff policy in Boston on October 15. In New York on October 22, he condemned Governor Smith's proposed course on Prohibition, farm relief, and hydro-electric development as State socialism. In a published statement of October 27, he met the outcry of agricultural malcontents by declaring that he would call a special session of Congress upon his inauguration, to make enactments for farm relief. At St. Louis, November 2, he expressed the intention of his party to create a Federal Farm Board with "power to determine the facts, the causes, the remedies" relating to the farm problem.

GOVERNOR SMITH'S CAMPAIGN. Governor Smith received at Albany, August 31, formal notification of his nomination by the Democratic party. He had previously, upon his nomination, issued a statement setting forth his personal views in opposition to Prohibition. In his formal address of acceptance he said: "The Democratic party asks the electorate to withdraw their confidence from the Republican party," and called the latter "responsible for the widespread dishonesty that has honeycombed its administration." He qualified prosperity under the Coolidge administration as unreal. He alleged an increase both in the appropriations and in the actual expenditures of the Government, and promised, if elected, to "effect a real reorganization and consolidation of governmental activities upon a business basis." He denied intention in his party to produce a tariff upheaval, and indicated that if elected he would seek to restore the Tariff Commission to its original scope. He proposed improv-

ing relations with the Latin-American republics, and promised "a more substantial endeavor to remove the causes of war" in the international field.

Governor Smith pledged with emphasis an honest effort to enforce the Eighteenth Amendment and the attendant laws. He declared that while the party platform was silent on the subject, he personally believed that there should be a change as to prohibition, and that he would advise Congress thereon if he became President. He recommended allowing each State to fix its own definition of the permissible alcoholic content of drink, within a maximum fixed by Congress, as a matter of immediate relief, and further, an alteration of the Eighteenth Amendment to enable each State, after a referendum, to sanction the manufacture, import, and sale of alcoholic beverages if it chose. The dry States, he proposed, should continue to enjoy the benefit of a National law enforcing Prohibition within their borders; and the saloon was not in any case to be restored.

As to agricultural distress, he pointed out the two vetoes of the McNary-Haugen Bill and asserted the failure of the President to offer any constructive alternative. He undertook, if elected, immediately to ask agricultural leaders, economists, and others to work out the details of legislation to solve the problem of farm-product distribution. He neither endorsed nor rejected the idea of an equalization fee, contained in the McNary-Haugen Bill. Power resources belonging to the Nation, he declared, should be prevented from passing into private hands by lease, but public authority "must control the switch that turns on or off the power." For the development of the Colorado River, he proposed setting up a Colorado River Authority, representing equally the States concerned. He advocated remedy of abuses of the employment of the court injunction against labor, and proposed maintaining immigration restriction but mitigating harsh methods.

Speaking Tours. Governor Smith made several extended speaking tours. Starting in mid-September, he invaded the agricultural West. In Omaha, September 18, he opened his campaign with a presentation of his farm-relief programme to the farmers. He declared himself to be in favor of the principle aimed at in the McNary-Haugen Bill, but not to be limited by the methods that it provided. By this time the so-called "whispering campaign," a private agitation against Governor Smith on the score of his Catholic faith, a subject of public opposition on the part of only a few individuals, such as Senator Heflin of Alabama, had become extremely alarming to the Democratic campaigners. At Oklahoma City, September 20, Governor Smith accordingly dealt at length and frankly with the "whispering campaign" and the anti-Catholic elements supposedly back of it. He denounced attacks on Tammany, his own parent political organization, as a "red herring" drawn across the trail by religious bigots. He declared his opponents in the Ku Klux Klan "totally ignorant of the history and tradition of this country." In Denver, September 22, he made the proper safeguarding of the Nation's hydro-electric resources his theme, and restated his ideas as to the Colorado River and Boulder Dam; he spoke at Butte, Mont., and at St. Paul. Returning to his own State, he addressed the Democratic State Convention October

1, at Rochester, on State issues, party responsibility, and water power.

In the middle of October, Governor Smith set out again for the border States of Tennessee and Kentucky. An effort was by this time necessary to hold Southern Democratic sentiment in line, on account of growing defection among Southern Drys and religious partisans, and the Governor's train was taken through Virginia and North Carolina, where numerous stops but no speeches were made. In Nashville, October 12, Governor Smith taxed Mr. Hoover with vagueness and challenged him to treat the Smith position on the issues. After speaking at Louisville on October 13, he entered Missouri and delivered one of the most vigorous addresses of the campaign at Sedalia, Mo., October 16. In this address he attacked the record of the Republican administration for economies, charging that the annual cost of operating the Federal departments had risen by \$200,000,000 between 1924 and 1927. This assertion was promptly controverted by Secretary of the Treasury Mellon in a published statement. The final Smith tour began with a speech in Philadelphia, October 27, in which the candidate assailed alleged inconsistencies in Mr. Hoover's record on Prohibition and criticized the existing state of Prohibition enforcement.

In Baltimore, October 29, the Governor again sought to counteract Klan antagonism, and criticized the conduct of foreign relations, a matter with which it had been widely bruited by Republicans that he was not conversant. On October 30, he spoke in Newark, again taxing Mr. Hoover with avoiding debate, and asserting that Charles E. Hughes, who had been actively speaking on the Republican side, ought logically to be the Republican candidate. He spoke in Brooklyn, November 2, on State issues, and in New York twice on November 3; one of the two addresses, over the radio, was directed at the Western farmers, while the other, before a New York audience, was a summing up of his chief campaign contentions.

Antagonists of Governor Smith. The candidacy of Governor Smith was exceptional in the amount of antagonism that it called out beyond the active circles of the Republican organization. The Democratic Senator Heflin of Alabama was the most radical of his opponents within the Democratic group. Senator Simmons of North Carolina, a strong advocate of Prohibition, was immovably opposed. Ex-Senator Owen of Oklahoma, another Democrat, followed prevailing sentiment in his State by refusing to support Governor Smith. He alleged the candidate's Tammany affiliation as the reason; Governor Smith rejoined that in 1924 the Senator had courted Tammany support for Owen as a possible compromise presidential candidate at the New York convention. William Allen White, editor of the *Emporia Gazette*, issued in July an attack on Governor Smith, in which were enumerated a series of votes in the New York Legislature, recording Smith, then a member of that body, as in favor of saloons and tolerant of commercialized vice. White withdrew of his own motion the charges of the latter description. Governor Smith issued August 20 a statement explaining his vote case by case, as affecting saloons. Many leading Democrats expressed themselves as opposed to Governor Smith's personal views on Prohibition but nevertheless supporting him as the party candidate. Party loyalty in some Democratic States was



ALFRED E. SMITH
GOVERNOR OF THE STATE OF NEW YORK
DEMOCRATIC CANDIDATE FOR PRESIDENT, 1928

much attenuated by antagonism to the candidate on religious and Prohibition grounds and by the activities of the Ku Klux Klan and other agencies. Senator Norris of Nebraska on the other hand bolted the Republican ticket.

THE VOTE. The election, held November 6, brought out a very large popular vote, so distributed that although Governor Smith polled more ballots than any previous Democratic candidate for the Presidency, Mr. Hoover, outrunning him by over six million popular votes, at the same time gained the electoral votes of 40 of the 48 States.

Popular Vote. According to the figures compiled by the Associated Press, the vote cast for Hoover and Curtis was 21,429,109; that for Smith and Robinson, 15,005,497; and the resulting plurality for Hoover and Curtis, 6,423,612. The total vote cast exceeded that of the National election of 1924 by about 6,600,000. Although greatly outdistanced, Governor Smith obtained only about a million votes less than the total cast for Coolidge in 1924. He lost heavily in some of the Southern and border States, as compared with the Davis vote in 1924, and greatly outran Davis in most of the populous Eastern and North Central States, including New York, Pennsylvania, and Illinois, which, however, he did not carry.

The popular vote cast for presidential electors, tabulated by States under the names of the presidential candidates of the more important parties, as published by the Associated Press on December 21, was as follows:

State	Hoover, Rep.	Smith, Dem.	Thomas, Soc.	Foster, Workers	Reynolds, Soc. Lab.	Pluralities Hoover	Smith
Alabama	120,725	127,796	460	.....	.....	.....	7,071
Arizona	52,533	38,537	.....	184	.....	13,996	.....
Arkansas	77,751	119,196	429	317	.....	.....	41,445
California	1,162,323	614,356	19,595	112	.....	547,967	.....
Colorado	253,872	133,131	3,472	675	.....	120,741	.....
Connecticut	296,614	252,040	3,019	730	622	44,574	.....
Delaware	68,860	36,643	329	59	.....	32,217	.....
Florida	144,168	101,764	4,036	3,704	.....	42,404	.....
Georgia	99,369	129,602	124	64	.....	.....	30,233
Idaho	99,848	53,074	1,293	.....	.....	46,774	.....
Illinois	1,768,141	1,313,817	19,138	3,581	1,812	454,324	.....
Indiana	848,280	562,691	3,871	321	645	285,589	.....
Iowa	623,818	378,936	2,960	328	230	244,882	.....
Kansas	513,672	193,003	6,205	320	.....	320,669	.....
Kentucky	558,064	381,070	837	293	340	176,994	.....
Louisiana	51,160	164,655	.....	.....	.....	.....	113,495
Maine	179,923	81,179	1,063	.....	.....	98,744	.....
Maryland	301,479	223,626	1,701	636	906	77,853	.....
Massachusetts	775,566	792,758	6,262	2,461	773	.....	17,192
Michigan	965,396	396,762	3,516	2,831	799	568,634	.....
Minnesota	560,977	393,451	6,774	4,553	1,921	164,526	.....
Mississippi	26,839	124,539	263	.....	.....	.....	97,650
Missouri	834,080	662,562	3,739	.....	340	171,513	.....
Montana	113,300	75,573	1,667	563	.....	34,722	.....
Nebraska	345,745	197,959	3,434	.....	.....	147,786	.....
Nevada	18,327	14,090	.....	.....	.....	4,237	.....
New Hampshire	115,404	80,715	464	173	.....	34,689	.....
New Jersey	925,796	616,517	4,897	1,257	500	309,279	.....
New Mexico	69,617	48,094	156	.....	.....	21,523	.....
New York	2,193,344	2,089,863	107,332	10,876	4,211	103,481	.....
North Carolina	348,923	286,227	.....	842	936	62,696	.....
North Dakota	131,441	106,648	842	936	.....	24,793	.....
Ohio	1,627,543	864,210	8,683	2,836	1,515	763,333	.....
Oklahoma	394,052	219,206	3,926	.....	.....	174,846	.....
Oregon	205,341	109,223	2,720	1,094	1,564	96,118	.....
Pennsylvania	2,055,382	1,067,586	18,647	4,726	380	987,796	.....
Rhode Island	117,522	118,973	.....	.....	.....	.....	1,451
South Carolina	5,858	62,700	47	.....	.....	.....	56,842
South Dakota	157,603	102,660	443	232	.....	54,943	.....
Tennessee	195,388	157,843	631	111	.....	38,045	.....
Texas	367,036	341,032	722	209	.....	26,004	.....
Utah	94,618	80,985	954	47	.....	13,633	.....
Vermont	90,404	44,440	.....	.....	.....	45,964	.....
Virginia	164,609	140,146	250	179	174	24,463	.....
Washington	335,844	156,772	2,615	1,541	4,068	179,072	.....
West Virginia	375,551	263,784	1,313	401	.....	111,161	.....
Wisconsin	544,205	450,259	18,213	1,528	381	93,946	.....
Wyoming	52,748	29,299	788	.....	.....	23,449	.....
Total	21,429,109	15,005,497	267,835	43,228	21,181	.....	.....

Electoral Vote. The Electoral College vote was: Hoover and Curtis, 444; Smith and Robinson, 87. It was distributed as follows:

HOOVER			
Arizona	3	New Jersey	14
California	13	New Mexico	3
Colorado	6	New York	45
Connecticut	7	North Carolina	12
Delaware	3	North Dakota	5
Florida	6	Ohio	24
Idaho	4	Oklahoma	10
Illinois	29	Oregon	5
Indiana	15	Pennsylvania	38
Iowa	13	South Dakota	5
Kansas	10	Tennessee	12
Kentucky	13	Texas	20
Maine	6	Utah	4
Maryland	8	Vermont	4
Michigan	15	Virginia	12
Minnesota	12	Washington	7
Missouri	18	West Virginia	8
Montana	4	Wisconsin	13
Nebraska	3	Wyoming	3
Nevada	3		
New Hampshire	4	Total	444

SMITH			
Alabama	12	Mississippi	10
Arkansas	9	Rhode Island	5
Georgia	14	South Carolina	9
Louisiana	10		
Massachusetts	18	Total	87

Among the States in the Democratic column were two that had been Republican in the two previous presidential elections. These were Massachusetts and Rhode Island. In both lived a large number of citizens of Governor Smith's own

faith and both States had suffered considerably in 1926 and 1927 from the depressed condition of the New England cotton textile mills. The defection of Southern States that had ranked for over a generation as invariably Democratic was a striking feature of the outcome. Virginia, North Carolina, Florida, and Texas gave the Republican candidates in all 50 electoral votes that had been regarded as traditionally Democratic. In Florida, the result was attributable in part to the influx of citizens from the Northern States. In the other three, as in Oklahoma, Tennessee and Kentucky, it was ascribed largely to antagonism toward Governor Smith himself, based on his political and religious beliefs.

Congress. The vote for United States Senators in the several States resulted in a large Republican gain, due in part to the coincidence that the seats filled in 1928 had been chiefly held by Democrats. A majority of thirteen Republicans in the Senate of the Seventy-first Congress was assured. The Republicans obtained a majority of at least 87 in the House. Senators were elected in 34 States (counting Maine which elected on September 10). Nine Republican senators, 11 Democratic, and 1 Farmer-Labor Senator were reelected. Three Republicans and one Democrat, elected to serve after Mar. 4, 1929, replaced senators of their own parties. Six Senate seats held by Democrats (in Delaware, Maryland, Michigan, Missouri, New Jersey, and Rhode Island) were gained by Republicans.

UNITED STATES MILITARY ACADEMY. A government institution at West Point, N. Y., for the theoretical and practical training of cadets for the military service of the United States; opened in 1802. On Sept. 1, 1928, the total number of cadets was 1272, distributed as follows: First class, 302; second class, 253; third class, 318; fourth class, 399. There were 215 members on the faculty. The Academy is a component part of the Regular Army of the United States and is maintained solely by appropriations from the War Department, which in 1928 amounted to \$2,246,587 for salaries and maintenance of public works, and to \$861,000 for continuing construction. The library contained 108,000 volumes. Superintendent, Wm. R. Smith, Major General, U. S. Army.

UNITED STATES NAVAL ACADEMY. A school for the education and training of midshipmen, at Annapolis, Md., founded in 1845. The total number of midshipmen at the beginning of the academic year 1928-29 was 1790, distributed as follows: First class, 248; second class, 427; third class, 509; and fourth class, 606. The faculty numbered 245. The library contained 70,000 volumes. Midshipmen, after graduation, are commissioned as ensigns in the United States Navy, and occasionally to fill vacancies in the Marine Corps and in certain staff corps of the Navy. Superintendent, Rear Admiral S. S. Robinson, United States Navy.

UNIVERSALISTS. A religious denomination existing chiefly in the United States, Canada, and Japan. It holds as parts of its doctrine the universal fatherhood of God and the final harmony of all souls with God. Its churches are grouped in 28 State Conventions and 2 State Conferences. A General Convention, held biennially, met in 1927 in Hartford, Connecticut. A report on church unity, adopted by the convention, was significant in that it emphasized that the basis of Christian unity is to be found not

in a common creed or similar practices of various churches, but in the recognition that Christianity is primarily a way of life. Resolutions adopted put the Convention on record as favoring the abolition of capital punishment and also as favoring the outlawry and abolition of war, either offensive or defensive. During the year, the Convention also commenced the construction of a Universalist National Memorial Church in Washington, D. C., and put into operation a ministers' pension plan.

The number of churches in 1928 was 613; ministers in fellowship, including lay licenses, 562; communicants and adherents, 85,056; and Sunday schools, 405. The denominational periodical, the *Christian Leader*, is published weekly. Headquarters of the denomination are at 176 Newbury Street, Boston, Mass. The Rev. Frank D. Adams, D.D., of Detroit, Michigan, was president of the General Convention in 1928.

UNIVERSE, STRUCTURE OF. See ASTRONOMY.

UNIVERSITIES AND COLLEGES. STATISTICS. The United States Bureau of Education published the statistics of universities, colleges, and professional schools for the college year 1925-26. The report deals with 975 different institutions. Of these, 154 were under public control and 821 under private control. There was a total of 156 independent professional schools. If these independent institutions are combined with the departments of universities, there were 180 schools of theology, 136 schools of law, 77 schools of medicine, 43 schools of dentistry, 67 schools of pharmacy, 5 schools of osteopathy, and 12 schools of veterinary medicine.

ENROLLMENT. The total number of students enrolled in the 975 institutions reporting to the Bureau of Education was 822,895, of which number 507,732 were men and 313,163 were women. These totals included 33,185 men and 22,447 women in preparatory departments. There were 20,159 men and 12,341 women in graduate departments; 92,591 men and 5,822 women in professional departments; and 23,211 men and 30,355 women registered as unclassified and special students. Schools of theology enrolled 13,655 students; schools of law 40,359; schools of medicine 19,682; schools of dentistry 11,777; schools of pharmacy 10,815; schools of osteopathy 1588, and schools of veterinary medicine, 537. A total of 59,315 students was enrolled in schools of engineering. These institutions enrolled 209,454 students in summer schools, 3772 in winter short courses, and 268,481 in extension and correspondence courses.

The institutions under public control enrolled a total of 290,893 students, while those under private control enrolled a total of 532,002 students.

Excluding those enrolled in summer schools, short courses, extension and correspondence courses in the four largest institutions under public control the numbers of students were: University of California, 18,969; University of Minnesota, 13,225; University of Michigan, 10,134; and the University of Illinois, 10,073. The four largest institutions under private control were: New York University, 20,383 students; University of Chicago, 14,472 students; Columbia, 12,527 students; and the University of Pittsburgh, 12,052 students. The four largest women's colleges were: Hunter College, 4401; Smith College, 2158; Wellesley College, 1599; and Simmons College, 1531 students. The Carnegie Institute of Technology had an enrollment of 2899; the Mas-

sachusetts Institute of Technology, 2813; and the Rensselaer Polytechnic Institute, 1251.

The average annual increase in the number of strictly college students for the six years ending in 1926 was 50,786. Between 1910 and 1920, the average annual increase was 19,600 students. From 1900 to 1910, it was 9900 students, while from 1890 to 1900, it was approximately 4600. Enrollments in the graduate departments increased 47 per cent from 1920 to 1922; 25 per cent from 1922 to 1924, and 13 per cent from 1924 to 1926.

PROFESSORS AND INSTRUCTORS. The total number of professors and instructors in the 75 institutions reporting was 62,224, of which number 48,649 were men and 13,575 were women. The 154 institutions under public control employed a total of 20,890 professors and instructors. Of these 16,815 were men and 4,075 were women. The institutions under private control employed 41,334. Of these 31,834 were men and 9500 were women. The percentage of increase in faculty members was not as large as the percentage of increase of students. In 1926 the ratio of students to professors was 13.2; in 1924 it was 12.9; in 1922, 12.4; and in 1920, 12.2.

DEGREES. During the college year 1925-26, the universities and colleges conferred a total of 71,529 baccalaureate degrees. Of these 41,106 were earned by men and 30,423, by women. A total of 11,451 graduate degrees were conferred. Of these, 1302 were Ph.D. degrees. The Ph.D. degrees were conferred upon 1115 men and 187 women. A total of 1214 honorary degrees were conferred. Of these 397 were the degree of D.D.; 374, LL.D.; 74 Litt.D.; while only three were for the Ph.D. Schools of law conferred 7938 first professional degrees; schools of medicine, 4122; schools of pharmacy, 3492; schools of dentistry, 2666; schools of theology, 1357; schools of osteopathy, 393; and schools of veterinary medicine, 123.

INCOME. The total income reported by the 975 institutions was \$479,774,664. This included \$72,374,608 received for endowment. The source of the income was as follows; student fees, \$101,499,120; room rent and board, \$42,346,824; productive funds, \$49,748,999; appropriations from city or State for increase of plant, \$18,355,836; appropriations by State or city for current expenses, \$81,522,432; United States Government, \$16,144,147; private benefactions for increase of plant, \$29,473,324; private benefactions for current expenses, \$16,396,853; all other sources, \$51,912,421. Excluding additions to endowments, student fees were 24.9 per cent of all college and university receipts for the year.

PROPERTY. In 1926 the total property belonging to these 975 institutions was valued at \$2,334,307,221. The value of grounds was \$225,721,958; buildings, \$911,498,850; libraries, apparatus, furniture, and other equipment, \$219,083,684; productive funds, \$978,012,929.

GIFTS AND BENEFACCTIONS. During the year 1928, many gifts for educational purposes were announced. The magnitude of individual gifts was not as great as that which characterized some of the benefactions in previous years. Among the gifts of one hundred thousand dollars or more, the following have been announced: Mr. and Mrs. Charles Ward Seabury gave \$150,000 to Berea College for a gymnasium. Bowdoin College received a bequest of \$250,000 from the late Frank A. Munsey, \$100,000 from Thomas Upham

Coe, and \$100,000 from F. G. Tallman to establish the Tallman Lecture Fund which will be used to bring visiting lecturers to the college, preferably from abroad.

Brookings Institution received a conditional gift of \$2,000,000 from the Laura Spelman Rockefeller Memorial. The University of Buffalo received a gift of \$100,000 from Darwin D. Martin to establish the Martin Professorship of Mathematics. The University of California received \$1,500,000 from A. P. Giannini. One-third of the gift was for construction of a building and the remainder for endowment. Mr. and Mrs. C. N. Flint gave a trust fund of \$120,000 to the University of California, Southern Branch. The university also received a gift of \$265,000 in memory of Col. Seelye W. Mudd, \$200,000 from Edward L. Doheny, Jr., and \$350,000 from Mrs. Philip E. Bowles for a men's dormitory.

The University of Chicago received \$120,000 from Robert Law, Jr. toward the fund to endow a distinguished service professorship; \$300,000 from the estate of Adolph J. Leihstern; \$400,000 from B. E. Sunny to be used to erect a gymnasium for elementary and high schools of the university; \$1,000,000 from the Carnegie Foundation for the New Graduate Library School; \$100,000 from Max Epstein to establish a Lying-in Hospital; a gift from Julius Rosenwald which may reach \$2,000,000; a gift of \$1,000,000 from Mr. and Mrs. Albert D. Lasker for the study of diseases of men and women of middle age; \$250,000 from Julius Rosenwald for research in physics, mathematics, and astronomy; and \$1,000,000 from the Laura Spellman Rockefeller Memorial to be used in teaching religion. Sereno P. Fenn gave \$100,000 to the Cleveland Y. M. C. A. School of Technology for a new building. Colorado College received \$250,000 for a chapel from Eugene P. Stone.

Columbia University received \$116,666 from F. W. Vanderbilt, \$250,000 from Mrs. Nathan J. Miller to endow a chair of Jewish culture, and \$1,000,000 by the will of Mrs. John Innes Kane. Cornell University received \$2,823,657 from the late Payne Whitney for its medical college, \$1,650,000 from an anonymous donor for the erection of residence halls, \$144,000 from Harrison D. McFaddin for a men's dormitory, \$1,500,000 from M. C. Taylor, and the General Education Board promised the University \$1,416,666.

The Cranbrook Foundation received \$6,500,000 from George C. Booth. The Croton Preparation School received \$1,129,222 from the estate of Payne Whitney. Dartmouth College received \$200,000 by the will of Captain Thomas P. Salter; \$300,000 from Frank P. Carpenter for a fine arts building; \$1,500,000 from the estate of the late Edwin Webster Sanborn, approximately \$400,000 of which is to be used for the construction and furnishing of an English house; and \$100,000 from Mrs. William Pierce Johnson. Dartmouth College also received a provisional gift of \$750,000 from the General Education Board, and the same amount from an anonymous donor, also \$1,158,000 from the estate of F. Augustus Schermerhorn.

Drew University received an endowment of \$1,000,000 and \$500,000 for buildings from Leonard D. and Arthur J. Baldwin. Mr. and Mrs. Thomas J. Maloney gave \$250,000 to Georgetown University for the Chemo-Medical Research Institute. Johns Hopkins University received an anonymous gift of \$100,000, \$155,000 and half of

residue of estate of Mrs. Rebecca Lanier King, and \$195,000 from the Chemical Foundation to the School of Public Health for the study of "the origin, nature, and possible cure of the common cold."

Harvard University announced the following: \$180,000 by the will of the late Archibald Cary Coolidge; \$627,347, residue of the estate of Curry Lowell; an anonymous gift of \$3,000,000 to build and endow a "House" or group of dormitories; \$2,000,000 from the estate of Charles M. Hall; and a conditional gift of \$3,000,000 from the General Education Board. The Hebrew Union College received a conditional gift of \$500,000 from Julius Rosenwald. Kalamazoo College received a bequest of \$350,000 for a library by the will of the late Mary Senter Mandelle. The Carnegie Foundation granted \$1,000,000 to the University of Michigan for the development of fine arts. Oberlin College received \$100,000 from Andrew H. Noah for a residence hall for men. J. T. Lupton gave \$250,000 to Oglethorpe University.

Phillips Exeter Academy received \$613,000 from William Boyce Thompson and \$320,000 from Edward Harkness. Rutgers University received \$140,000 from the estate of Mary B. Pell. St. Xavier College received \$150,000 for the extension of its campus. An anonymous donor gave Scripps College \$250,000 for building and furnishing a recitation hall. Sweet Briar College received \$185,000 from an unnamed member of the directors of the institution for the erection of a library. Edward Harkness gave \$500,000 to the Taft School toward a \$2,000,000 endowment. The University of Tennessee received \$250,000 by the will of the late Martha A. Henderson for the erection of a girls' dormitory.

Cyrus H. K. Curtis, the publisher, made a gift of \$500,000 to Temple University. The General Education Board gave \$135,000 to the University of Texas to be used by the department of zoölogy in the development of graduate instruction and research during the next eight years. Union University received \$250,000 from Edward Harkness for the Albany Medical School. A sum of about \$150,000, the residuary estate of Miss Evelyn Colgate, was to be divided between Colgate University and Vassar College. Washington University received \$630,000, the residue of the estate of the late George Warren Brown.

The University of Washington received \$290,000 from the Daniel Guggenheim Fund for the Promotion of Aeronautics; and \$360,000 from Mrs. Newton R. Wilson to be used for a new building for Mary Institute. Wesleyan University received endowment from "six friends of the university" to the extent of \$600,000; also \$100,000 each from John E. Andrews, George W. Davidson, George S. Ingraham, Albert W. Johnston, and Henry I. Harriman. Mrs. Stephen Henry Olin gave Wesleyan University \$100,000 for the upkeep of the new library. The following gifts were announced by Yale University: \$1,000,000 by the will of the late Chauncey M. Depew; \$1,000,000 from Abram E. Fickern for the study of children's diseases and child life; books valued at more than \$400,000; and \$2,823,657 from the late Payne Whitney.

NEW PRESIDENTS. During the year, the following new presidents of universities, colleges, and technological schools were reported: Dr. Bradford Knapp was elected president of Alabama

Polytechnic Institute. Dr. Robert Devore Leigh was elected president of the New Woman's College, located at Bennington, Vermont. The Rev. Dr. Walter B. Greenway was elected president of Beaver College. Ira N. Chiles was elected president of Central Wesleyan College. Dr. Joseph Eugene Rowe was chosen president of the Clarkson Memorial Institute of Technology. Dr. Earl A. Roadman was installed as president of Dakota Wesleyan University. Dr. Franklin W. Johnson was elected president of Colby College. Dr. Frederick M. Hunter was elected president of the University of Denver. Dr. Garfield B. Oxnam was elected president of De Pauw University. Dr. H. L. Donavan was elected president of Eastern Kentucky State Teachers' College. The Rev. W. Coleman Nebils was elected president of Georgetown University. The Rev. Dr. C. R. Myers was elected president of Hartwick College. Dr. James M. Kieran was elected president of Hunter College. Royal C. Agne was elected president of Huron College. Dr. F. J. Kelley was elected president of the University of Idaho. Dr. Ray H. Latham was elected president of Iowa State Teachers College. Dr. James E. Coons was elected president of Iowa Wesleyan College. The Rev. Brother Albert was elected president of La Salle College. The Rev. William M. Magee, S.J., was elected president of Marquette University. The Rev. John Timothy Stone was elected president of McCormick Theological Seminary. Dr. Spright Dowell was elected president of Mercer University.

Dr. Alfred H. Upham was elected president of Miami University. The Rev. Dr. W. N. Schwarze was elected president of Moravian College and Theological Seminary. Dr. Edgar Albert Burnett was elected chancellor of the University of Nebraska. Dr. Charles L. O'Donnell was elected president of the University of Notre Dame. Dr. H. G. Bennett was elected president of Oklahoma Agricultural and Mechanical College. Dr. Edmund D. Soper was elected president of Ohio Wesleyan University. Dr. G. I. Christie was elected president of Ontario Agricultural College.

Dr. Charles K. Edmunds was elected president of Pomona College. Dr. James L. Meader was elected president of Russell Sage College. Dr. Ezra T. Franklin was elected president of Southwestern College. Dr. Harvey N. Davis was elected president of Stevens Institute. Dr. Frank Parker Day was elected president of Union College. Rear Admiral Samuel S. Robison was appointed as superintendent of the U. S. Naval Academy. Dr. Francis P. Gaines was elected president of Wake Forest College. Austin H. Fitts was elected president of the University of West Virginia. B. O. Skinner was elected president of Wilmington College.

EDUCATIONAL BOARDS AND FOUNDATIONS.—**GENERAL EDUCATION BOARD.** The General Education Board was founded in 1902. Its assets June 30, 1927, were reported as \$98,353,706.23. The receipts during the year ending June 30, 1927, were \$19,664,854.24. This included a balance on June 30, 1926, of \$13,336,767.61. The disbursement for the year from income was \$5,460,271.60, leaving a balance on June 30, 1927, of \$14,204,582.64. From the date of the Board's foundation, in 1902, to June 30, 1927, there had been appropriated from principal funds a total of \$82,182,118.96; and from income, \$77,783,703.01, making a total of \$159,965,821.97. Of the amounts appropriated, \$111,549,540.39 had been paid, leaving unpaid a total of \$48,416,281.58. In addition to the above

payments, \$195,691.81 had been appropriated and paid from the income of the Anna T. Jeanes Fund to rural schools for Negroes.

LAURA SPELMAN ROCKEFELLER MEMORIAL. The report of the treasurer for the year ending Dec. 31, 1928, shows assets amounting to \$85,386,931.87. This was made up of a principal fund amounting to \$73,089,522.85, and income accounts totaling \$12,279,409.02. The income for the year was \$9,311,820.72. This included a total of \$4,996,564.27 made up of a balance from the preceding year and refunds on prior year payments. The disbursements were for payments on appropriations, \$3,250,106.29; administration, \$196,898.61, making a total of \$3,447,004.90, and leaving a balance of \$5,864,815.82. During the year, the memorial appropriated \$1,641,649.20 for research and work in the field of child study and parental education; and a total of \$854,600 to organizations in the general field of social welfare.

CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING. The total resources of this Foundation are reported as \$30,857,000, of which \$15,647,000 is held as permanent general endowment, \$1,351,000 as endowment of the Division of Educational Enquiry, \$12,428,000 as a reserve for liquidating pension liabilities accruing after 1928, \$830,000 to assist colleges and universities to adopt the contributory plan of annuities, and \$601,000 as an emergency reserve. During the twenty-two years of its activity, the Foundation has paid out in retiring allowances to professors and pensions to their widows over \$15,985,000. During the year ending June 30, 1927, the total expenditure from general funds was \$1,403,188.42. Of this sum \$1,314,419.92 was for retiring allowances. The expenditure for the Division of Educational Enquiry was \$73,394.96; of this sum, \$22,806.77 was used for a study of college athletics.

The Teachers Insurance and Annuity Association of America, which was organized by the Carnegie Foundation and financed by the Carnegie Corporation, reported that deferred annuity contracts provided by the Association had been adopted by 176 institutions. Teachers in 400 other institutions had taken contracts in the Association. The number of annuity contracts in force at the end of 1926 was reported as 4542, representing a total annual annuity of \$7,151,070. There was a total of 3715 insurance policies amounting to \$20,448,651. The premium income for 1926 was \$1,982,547. The Association had resources of \$9,092,558. See **CARNEGIE CORPORATION**; **CARNEGIE FOUNDATION**.

THE CARNEGIE CORPORATION. The report for the year ending Sept. 30, 1928, shows that the Corporation has total funds amounting to \$128,691,443.59. The total income for the year was \$7,103,279.58. The donations paid during the year amounted to \$5,923,689.25. This included \$50,000 for buildings, \$279,734.67 for library and other buildings for institutions, and \$3,346,666.68 for endowments. The total charges against future income were \$21,418,581.84. The Corporation also had a special fund the income of which is to be used in Canada and the British Colonies. The total amount of this fund was \$13,862,088.90. The income for the year ending Sept. 30, 1928, was \$679,873.16. Donations amounting to \$209,528.15 were paid. Of this amount, \$25,000 was given to the Royal Society of Canada. Of the remainder, a considerable por-

tion was given to the furtherance of an African programme. See **CARNEGIE CORPORATION**.

THE COMMONWEALTH FUND. For the year closing Sept. 30, 1927, the Fund reported assets amounting to \$39,371,091.97. The income for the year was \$2,444,579.64. The expenses totaled \$1,938,564.04. The fund was concerned with child welfare. A child-health programme was inaugurated with the organization of child-health demonstrations in Fargo, N. Dak.; in Clark County, Ga.; in Rutherford County, Tenn.; and in Marion County, Oreg. Each was planned to require seven years for its completion. The emphasis of the demonstration is on preserving and building up the health of the "so-called normal child." A second activity of the fund was in connection with mental hygiene and child guidance. The work that the fund had undertaken as a "programme on methods of preventing delinquency in the bureau of children's guidance" was replaced by an institute for child guidance.

ROCKEFELLER FOUNDATION. The Rockefeller Foundation was incorporated in 1913. The secretary's report for the year ending Dec. 31, 1927, showed assets consisting of a principal fund amounting to \$162,291,624; land, buildings, and equipment, \$9,344,666; income accounts, \$20,546,833.47, making a total of \$192,183,124.09. The income from general fund for the year was \$18,430,550.39. This included a balance from 1926 and refunds of payments made in previous years, totaling \$6,098,647.51. The disbursements for central administration were \$2,569,236.78; international health division, a total of \$3,660,968.22; division of medical education, \$4,992,918.79, making a total of \$11,223,123.79. See **ROCKEFELLER FOUNDATION**.

JOHN SIMON GUGGENHEIM MEMORIAL FELLOWSHIPS. This foundation was established in 1925 with a capital fund of \$3,500,000. It grants fellowships which are "awarded only to young scholars and artists who have given unequivocal evidence of marked gift for research or for creative work and who are engaged in constructive projects requiring special facilities available abroad. Both men and women are eligible. The stipend is usually \$2500 and is awarded for one year. For the year 1928-29 the awards totaled \$173,000 and were given to 75 candidates, 16 of whom were reappointed in order to enable them to complete studies or projects begun during the previous year.

LIMITING COLLEGE ENROLLMENT. Colleges and universities continued to give marked attention to the problem of limiting numbers. An increasing number of institutions had limited either the number that they would receive as freshmen or the number of the student body. The University of Chicago, for example, announced that they would receive only 750 in the freshman class. Lafayette College limited its student body to one thousand. There was a general tendency to increase tuition charges so as to have the student more nearly pay the actual cost of his instruction. Several institutions, including Yale, Harvard, Massachusetts Institute of Technology, Brown, Dartmouth, Williams, Smith, and Wellesley had tuition charges amounting to \$400 per year. Johns Hopkins University had charges of \$450 per year. Other institutions had raised their tuition charges to \$300. In each case the institutions tried to safeguard themselves against the possibility of excluding desirable students. To accomplish this they increased the

amount of loan funds and scholarships. As a result it was easier for a competent, earnest young person to secure a college education than at any previous time in our history. On the other hand, it was asserted that there was a very large number of students who had no serious purpose in attending college, but who went for the social or athletic prestige that the colleges furnish. President Angell of Yale University in a speech before the National Educational Association, Department of Superintendence, made the following statement:

The whole political-educational conception under which we are working is too largely that a college or university education is open at little or no cost to any one of moderate capacity and still more moderate powers of application. There is little or no sense of privilege about it and practically no sense of obligation. Merely to multiply the number of college-trained youths who go back into the community with no vivid feeling of duty to capitalize for the benefit of the commonwealth the training they have received is quite as likely to prove a curse as a blessing for the state.

With colleges and universities crowded and with an increasing number seeking to enter these institutions, it was easy to talk about the limitation of numbers in colleges and universities. Actually to limit numbers was not such a simple matter. The people of the country seem to have supreme confidence in the value of a college education, and, with the prosperity that has existed, parents have chosen to send their children to college. There has seemed no alternative. It has often happened that young people who were in few respects qualified to pursue college work have gained admission. While this may not be a serious matter for the students concerned, it has been a serious matter for the colleges to maintain what they regard as a suitable standard.

More recently, attention has been directed toward making it possible for young people to secure the equivalent of college work during the time they were profitably employed. In places where institutions of higher learning are located, it is possible to find large numbers of young people working in offices and stores who are improving themselves by following courses given during the evening. This is a phase of adult education that bids fair to be important.

During the year, some college administrators have advanced the idea that a great deal could be accomplished by changing methods of instruction within colleges so as to properly care for much larger classes than are now common. Already there was one institution in which there was at least one class that numbered a thousand students. This class met as a unit and apparently results were satisfactory. This plan could not be followed in certain types of laboratory work, but it was claimed that it could be followed in much of the work that is done.

In the past, there has been strong emphasis upon the personal relationship between the professor and the students. It has been assumed that this relationship could exist only when the classes were small. It is true, however, that often the professor in charge of a small class has been no aloof than the one who has had a much larger one. It was urged in some quarters that the methods of teaching and of control be altered so as to conform to the needs that the colleges now face.

LOAN SCHOLARSHIPS OF THE AMERICAN BANKERS ASSOCIATION. A foundation fund of \$500,000 was started in 1925. The trustees proposed to establish 167 collegiate loan scholarships to

stimulate and aid worthy men or women students to pursue courses in banking and economics in selected colleges and universities. The loans are for \$250 for the scholastic year, to be repaid upon the student's entering business life. The general plan announces the allotment of "one scholarship to a higher institution of learning in each State where the banks have completed the subscription quotas assigned them in the foundation fund." Additional scholarships are allowed for each unit of \$2000 or excess fraction of that amount above \$500 contributed from the State. The interest on the loans will be 5 per cent beginning after the student leaves school. Payments may be made in installments of \$10 or more. Students who discharged all their financial obligations connected with this loan were to be given certificates signed by the board of trustees. These certificates might then be used as evidence of financial reliability.

JUNIOR COLLEGES. Since 1917, 15 different States have passed laws dealing with junior colleges. The report of the U. S. Bureau of Education shows that the number of junior colleges in 1926 was 153, located in 31 different States. Of these, 47, enrolling 13,850 students, were under public control, and 106, enrolling 22,660 students, were in private institutions. In general, junior colleges had not been prominent in Eastern States. In the statistics for 1925-26, the only New England State that reported was Massachusetts with 375 students. That same year, New York reported only 127 students. There were none in Pennsylvania, Delaware, or New Jersey. During 1928, however, two noteworthy institutions were opened in New York State.

During 1928, Columbia University organized the Seth Low Junior College as a Brooklyn part of the University. The college was designed to care for the first two years of college work, after which the students might enter Columbia College or some of the professional schools.

The Sarah Lawrence College, a new junior college for girls, opened in October in Bronxville, New York. The aims of the college have been described as follows:

To graduate women in whom interests have been so stimulated that they will continue as an animating principle throughout life. To graduate women whose experience in group activities has shown them the value of cooperative effort, so that they become either fruitful as leaders or skilled in rendering service under the effective leadership of others.

To graduate women who have experienced the value of leisure and whose varied interests insure the profitable use of whatever leisure time shall be theirs.

The college was founded by the late William Van Deuser Lawrence in memory of his wife. It opened with 150 students. It was expected that this number would be increased to 250 as soon as dormitory accommodations could be provided.

TEACHERS' COLLEGES AND NORMAL SCHOOLS. The U. S. Bureau of Education reported that, for the school year 1925-26, there were 402 institutions engaged primarily in teacher training. Of these institutions, 101 were classified as teachers' colleges, 102 as State normal schools, 27 as city normal schools, 108 as county normal schools, and 64 as private normal schools. The report called attention to the remarkable growth of teachers' colleges. In 1920 there were 46 such institutions as contrasted with 101 in 1926. In 1920, 44.4 per cent of the students preparing to teach were in teachers' colleges, whereas in

1926, 62.1 per cent were in such institutions. In 1926 there was a total of 494,290 students enrolled in all teacher-training institutions. In the same year there were about 960,000 teaching positions of all kinds in the United States. There was, therefore, half as many persons preparing to teach as there were teaching positions. In 1894, there was one person in training for every 5.6 positions, while in 1910 there was one for every 5.5 teaching positions. This remarkable increase in the number of those preparing to teach brought with it some serious problems in relationship to the placement of graduates from the various institutions. City normal schools were the first to feel the importance of this problem. It was reported that there were among such schools some which had not been able to place the last two classes that had been graduated.

The total value of all property belonging to normal schools and teachers' colleges reporting was \$202,630,512. Of this, \$19,425,113 represented the value of endowments. The expenditures reported by 101 teachers' colleges for current expenditures totaled \$24,501,325. The total current expenditures reported by 101 State normal schools were \$15,134,791. The city normal schools reported a total for current expenditures of \$2,039,851. The county normal schools reported a total of \$595,089, and the total current expenditures reported by 37 private teacher-training schools were \$3,428,879.

UNIVERSITY EXTENSION. See EDUCATION.

UPPER SENEGAL AND NIGER. A colony under the government-general of French West Africa; officially known since Dec. 4, 1920, as French Sudan. See FRENCH SUDAN and FRENCH WEST AFRICA.

UPPER SILESIA. See POLAND.

UR. See ARCHÆOLOGY.

URUGUAY, ū'ru-gwā or ō'rōōgwī. A republic of South America bounded by Bolivia, Argentina, and Brazil. Capital, Montevideo.

AREA AND POPULATION. Area, 72,153 square miles; population, at the beginning of 1928, 1,762,451. The chief cities with their populations on Dec. 31, 1926, were Montevideo, 439,129; Paysandu, 26,000; Salto, 30,000, and Mercedes, 23,000. The movement of population in 1927 was: Births, 42,845; deaths, 19,944; marriages, 10,243. The immigrants in 1926 numbered 170,535; the emigrants, 153,016. The immigrants came chiefly from Spain, Italy, Brazil, France, Germany, Great Britain, and Argentina.

EDUCATION. According to figures published by the General Bureau of Statistics, elementary education in Uruguay during 1927 was given by 4425 teachers and assistant teachers to an average of 122,872 children attending 1464 primary schools. There were in addition night schools for adults, normal institutes, schools for deaf-mute children, open air schools, etc.

PRODUCTION. About 60 per cent of the total area is devoted to stock raising, about 20 per cent to mixed farms and ranches, and 5 per cent to purely agricultural farms. The value of the principal crops for the agricultural year 1926-27 was as follows: Wheat, 14,155,000 pesos; corn, 3,910,000 pesos; linseed, 3,917,000 pesos. According to the livestock census of 1924 there were 8,432,000 cattle, 14,443,000 sheep, 18,800 goats, and 251,000 swine. The estimated production of the principal crops for 1927-28 was as follows: Corn, 233,463 tons;

wheat, 377,944 tons; flax, 52,007 tons; oats, 38,398 tons; barley, 1745 tons; birdseed, 560 tons; and rye, 106 tons. Cattle to the number of 689,541, and 1,494,645 sheep were slaughtered in 1927. The 1926-27 wool clip was estimated at about 125,000 bales of about 1000 pounds each, while the 1927-28 clip was placed at 130,000 bales.

Deposits of various minerals, including gold, copper, manganese, and petroleum, have been found, but mining is little developed. Exports of mineral products amounted to 2,658,000 pesos (\$2,694,000) in 1927, an increase of about 900,000 pesos over 1926. The only manufacturing industry of importance is the preparation of products of the stock-raising industry. About 70 per cent of the industrial establishments are located in the Department of Montevideo, which in 1926 had 4468 establishments with 53,381 employees.

COMMERCE. Uruguay's export trade consists chiefly of pastoral products and, to a lesser extent, of agricultural products. In 1927 total exports amounted to 96,674,131 pesos, an increase of 2,370,641 pesos over 1926, owing largely to greater exports of wheat and wheat flour, linseed, wool, hides, and sand, the rise being all the more noteworthy considering that exports of meat and meat products declined nearly 10,000,000 pesos. About 19 per cent of these exports went to the United Kingdom and about 18 per cent to Germany as against 14.2 per cent to Argentina, 13.8 per cent to France, 8.2 per cent to Belgium, and 7.7 per cent to the United States. As usual the bulk of the shipments to the United States consisted of wool, hides, and canned meats.

Uruguay's import trade is in contrast to its export trade. It consists of a great variety of manufactured and other products. In 1927, out of a total import trade of 84,003,934 pesos, an increase of about 10,000,000 pesos over that of the previous year, the following commodities were valued between 1,000,000 and 6,000,000 pesos: Olive oil, refined sugar, yerba mate, automobiles, tires, pine lumber in general, potatoes, naphtha, common yams, silk, and coal. Uruguay's chief suppliers were the United States, Great Britain, Germany, and France. In 1927 the United States supplied 30.3 per cent of the total, as against 15.7 per cent by Great Britain, 10 per cent by Germany, and 6.3 per cent by France. The most important imports from the United States are automobiles, petroleum, and petroleum products.

FINANCE. The estimated receipts and recommended expenditures for the fiscal year 1928-29 totaled 55,066,351 and 55,450,795 pesos, respectively—thus anticipating a deficit of 384,444 pesos. The national council of administration stated that these figures did not include extraordinary appropriations annually authorized by the legislature for special purposes or for supplementing insufficient appropriations. If these expenditures be included in the budget for 1928-29, the estimated deficit would amount to 1,384,000 pesos. It was hoped, however, that the surplus of the 1927-28 budget would cover the total deficit of the 1928-29 budget. The total public debt on Aug. 31, 1927, was 218,309,000 pesos.

COMMUNICATIONS. The transportation facilities of Uruguay are not highly developed. There are two important rivers, the Uruguay and the

Negro, both of which are navigable by large sea-going vessels, the former for about 200 miles and the latter for about 30 miles, but they are not extensively utilized. In 1926, the two companies which maintain regular steamship service between Montevideo and Buenos Aires, carried both ways total cargoes of 55,278 tons as against 47,261 tons in 1925. In 1927 there entered the ports of the country 12,503 vessels with a total of 15,037,000 net registered tons.

The country has 1585 miles of steam railways, or about 22 miles per 1000 square miles, of which about 90 per cent is owned by private interests and the remainder by the Government. Of the total railway mileage of the country, a little over one-half is owned by a single company, the Central del Uruguay, whose lines link Montevideo with the border towns in the far east, north, and on the south coasts. The highway system of the country is composed of 548 miles of hard-surfaced roads, all of which are around Montevideo, and 4624 miles of dirt roads, throughout the country. On Mar. 31, 1928, there were 23,793 telephones in use in the country, 16,236 of these being in the Montevideo city area.

GOVERNMENT. Under the constitution of Jan. 3, 1918, legislative power is vested in the Parliament of two Houses, the Chamber of Representatives, elected by universal suffrage of males over 18 years of age, and the Senate, chosen by an electoral college which is elected by popular vote. Executive power is vested in the President, elected by direct popular vote and a national administrative council of nine members. President in 1928, Dr. Juan Campisteguy, elected for the term Mar. 1, 1927-Feb. 28, 1931.

UTAH. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 449,396. The estimated population on July 1, 1928, was 531,000. The capital is Salt Lake City.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Hay	1928	647,000	1,500,000 *	\$17,380,000
	1927	644,000	1,574,000 *	14,311,000
Wheat	1928	257,000	6,861,000	6,738,000
	1927	242,000	5,678,000	5,792,000
Potatoes	1928	23,000	3,312,000	1,490,000
	1927	22,000	2,970,000	2,228,000
Sugar beets	1928	53,000	623,000 *	.....
	1927	55,000	677,000 *	4,761,000
Oats	1928	55,000	2,475,000	1,386,000
	1927	51,000	2,142,000	1,285,000
Barley	1928	34,000	1,656,000	1,216,000
	1927	30,000	1,410,000	1,072,000

* tons.

MINERAL PRODUCTION. The metals, copper, lead, silver, zinc, and gold, given in the order of the annual value of their product, furnish about four-fifths of the entire mineral output of the State. Coal supplies the greater part of the remainder. The value of the combined mine production of the five important metals was much less, however, for 1927, than it had been for 1926. The total for 1927 was \$73,626,632; for 1926, \$82,662,884. The decrease was due to lower prices for all the metals named except gold. The quantities produced in 1927 in each case either exceeded those for 1926 or fell but little below. These quantities were: gold, 1927, 193,909 fine ounces, 1926, 182,763; silver, 1927, 18,606,950 fine ounces, 1926, 19,358,581; copper, 1927, 256,933,273 pounds, 1926, 257,464,482;

lead, 1927, 302,570,040 pounds, 1926, 295,270,025; zinc, 99,185,443 pounds, 1926, 95,179,380. In point of total value, copper production was foremost, attaining \$36,045,027 for 1926; lead attained \$23,621,602; silver, \$12,079,755; zinc, \$7,138,454; gold, \$3,778,046. The quantity of coal mined in 1927 was 4,781,480 net tons and that in 1926, 4,373,793 tons; the value of the output was \$11,084,000 for 1927 and \$10,362,000 for 1926. Clay products to the value of \$929,782 for 1926, native asphalt (\$886,730 for 1926), stone (\$623,608 for 1926), salt, iron ore, pig iron, lime, and arsenious oxide were the chief other items of production. The total value of the State's mineral products was \$98,985,218 for 1926; for 1925, \$100,275,442.

The 1928 production of gold was \$4,301,000; of silver, 16,682,000 ounces, having a value of \$9,759,000; copper, 290,044,000 pounds, \$42,846,000; lead, 286,792,000 pounds, \$17,494,000; zinc, 97,034,000 pounds, \$5,822,000. For all five metals, the value of the production was \$79,722,000.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the United States Department of Commerce, were: for maintenance and operation of governmental departments, \$8,003,287 (of which \$3,712,725 was aid to local education); for interest on debt, \$457,633; for permanent improvements, \$1,974,947; total, \$10,435,867 (of which \$2,645,779 was for highways, \$860,832 being for maintenance and \$1,784,947 for construction). Revenue was \$11,062,291. Of this, property and special taxes formed 51.0 per cent; departmental earnings and charges for officers' services, 7.5 per cent; sales of licenses and taxation of cigarettes and gasoline, 22.1 per cent. Property valuation was \$696,061,566; State taxation thereon, \$5,244,841. Net funded State debt on June 30, 1927, was \$6,594,750.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 2193.89. There was built in 1928, 0.64 mile of additional second track.

EDUCATION. State Superintendent Jensen reported steady progress in 1928 in the development of all divisions of the public-school system of the State. The school population as estimated for the academic year 1927-28 was 143,811. There were enrolled in the public schools in that year 133,829 pupils; of these, 105,776 were in the elementary grades and 28,053 in the high schools. The expenditures of the year for public-school education within the State, including capital outlay and debt service, amounted to \$11,121,980. The averages of teachers' salaries were: in elementary schools, \$1128; in junior high schools, \$1502; in senior high schools, \$1642.

CHARITIES AND CORRECTIONS. The functions of central control over the activities of the State in the care and custody of individuals are not combined in any single unit. A Board of Corrections, consisting of the Governor and of two appointed members serving terms of four years, exercises authority over penal institutions. Matters relative to the insane come under an Insanity Board consisting of the Governor, State Auditor, and State Treasurer. The State beneficent and custodial institutions are State School for the Deaf and Blind, at Ogden; State Industrial School, Ogden; State Mental Hospital, Provo; State Prison, Salt Lake City. The first two have their own boards of trustees. The

last two are under the Board of Insanity and the Board of Corrections, respectively. Prison admittances in 1927 numbered 145; State prisoners in custody at the outset of 1928, 208. Mental patients at the State Hospital at the beginning of 1928 totaled 809.

POLITICAL AND OTHER EVENTS. Passenger and mail service by airplane between Salt Lake City and Great Falls, Mont., began operation August 1. The State Securities Commission put in force regulations governing investment trusts in the State. Governor Dern continued efforts to bring Utah and the other Colorado Basin States into agreement on the Boulder Dam project by conferences.

ELECTION. In the election of November 6, Herbert Hoover, Republican, gained a small plurality over Alfred E. Smith, Democrat, in the popular vote for President. The vote was: Hoover, 94,618; Smith, 80,985. A great part of the Progressive vote of 1924 apparently went to Smith, but not enough of it to give him the State. George H. Dern, Democrat, was reelected Governor. United States Senator William H. King, likewise, was reelected on the Democratic ticket. The two incumbents, both Republican, were returned to the House of Representatives.

OFFICERS. Governor, George H. Dern; Secretary of State, H. E. Crockett; Treasurer, John Walker; Auditor, John E. Holden; Attorney-General, Harvey H. Cluff; Superintendent of Public Instruction, C. N. Jensen.

JUDICIARY. Supreme Court, Chief Justice, Samuel R. Thurman; Associate Justices, Elias Hansen, James W. Cherry, N. D. Straup, Valentine Gideon.

UTAH, UNIVERSITY OF. A State institution of higher education at Salt Lake City, founded in 1850. The total enrollment for the autumn of 1928 was 2791, and for the summer session of the same year, 741. The teaching faculty, exclusive of 11 on leave of absence, studying at other institutions, numbered 173. The productive funds of the university amounted to \$809,142, and the income for 1927-28 was \$895,489. The library contained 95,319 volumes and 28,285 pamphlets. President, George Thomas, Ph.D.

VACCINATION. See HYDROPHOBIA; SMALL POX AND VACCINATION.

VALLEY FORGE ANNIVERSARY. See CELEBRATIONS.

VANADIUM. In the United States the greater part of the vanadium used was imported from Peru, the amount during the year totaling 498 tons of vanadium ores, valued at \$49,771 as against imports of 6199 tons, valued at \$561,051 in the previous year. The 1928 ore supply was estimated to carry from 11 to 12 per cent of vanadium. In the United States, a single mine on East Rifle Creek in Colorado and the oxide plant on the railroad at Rifle Creek southwest of the mine was the single domestic source of vanadium oxide. The ore as found here was a roscoelite bearing sandstone probably accompanied by other vanadium minerals. The vanadium oxide thus obtained was shipped to Niagara Falls and reduced to ferro-vanadium. The Peruvian mines of the Vanadium Corporation of America shipped to the United States; while Europe received its ores from South Africa. Vanadium was finding application as a catalyst in the manufactures of sulphuric acid and various organic compounds. By the use of certain vanadium salts a cheaper

and more efficient process than with platinum sponge could be developed as the salts were not poisoned and were found much cheaper.

VANDERBILT UNIVERSITY. A non-sectarian institution of higher learning for men and women at Nashville, Tenn., founded in 1873. The enrollment in the autumn term of 1928 was 1404 students, distributed as follows: Graduate students, 116; college of arts and science, 751; school of engineering, 134; school of religion, 82; school of law, 83; school of medicine, 181; school of nursing, 57. The students in the college of arts and science comprised 551 men and 200 women. The faculty, exclusive of administrative officers, librarians, and assistants, numbered 180. Productive funds of the University amounted to \$9,000,000; the annual income was about \$800,000; and the value of the property was estimated at \$5,650,000. The library contained 144,000 volumes. Chancellor, James H. Kirkland, Ph.D., LL.D., D.C.L.

VASSAR COLLEGE. A non-sectarian institution for the higher education of women at Poughkeepsie, N. Y., founded in 1861. The enrollment for the autumn of 1928 was 1155, distributed as follows: Seniors, 228; juniors, 282; sophomores, 310; freshmen, 335; and a summer institute of eugenics was held with a registration of 88. The teaching staff for the year 1928-29 had 152 members, including 6 on leave of absence, 5 student assistants, 1 teaching fellow, and 1 reader. The endowment, including fellowships and scholarships, amounted to \$6,884,056 and the income for the year to \$359,668. Gifts received during 1927-28 were in excess of \$500,000. There were 156,000 volumes in the library. The Minnie Cumnock Blodgett Hall of Eugenics was opened in the autumn of 1928. President, Henry Noble MacCracken, Ph.D., LL.D., LL.D.

VATICAN. See ROMAN CATHOLIC CHURCH.

VEGETABLES. See HORTICULTURE.

VEHICLES, VEHICLE CODE. See AUTOMOBILES.

VENEREAL (vē-ně'rě-al) DISEASES. It is a singular coincidence, to go no further, that the two microorganisms which are responsible for the major venereal diseases—to wit, the *gonococcus* and the *treponema pallidum*—are very susceptible to the action of high temperatures which are at present in extensive therapeutic use. But while in gonorrhea the application of heat is chiefly local in the form of diathermy, in syphilis the temperature elevation is obtained by inoculation with malarial blood or germs and other substances known to raise the general temperature. For some years it has been known that elevation of the general temperature is sufficient to destroy the *treponema* and incidentally to cure a goodly number of victims of paresis, otherwise known as syphilitic meningo-encephalitis; and the suggestion was near at hand that any other stage or form of syphilis could likewise speedily be cured by the rapid and wholesale sterilization caused by the artificial high temperature. The theory is sound enough, but the principle of causing one disease to eliminate another has its drawbacks. In the *Deutsche medizinische Wochenschrift* for June 22, 1928, Professor Zieler, a well-known venereologist of Würzburg, advocated the use of the malarial inoculation for syphilis in a number of special categories of patients, but as a rule only after the drug treatment had proved unsatisfactory. See SYPHILIS.

VENEZUELA, vèn'è-zwè'là, *sp. pron.* vā' nā-thwā'lā or *Amer. Sp. pron.* vā'nā-swā'lā. A republic on the northern coast of South America, bordering on the Caribbean Sea and lying between Colombia on the west, Brazil on the south, and British Guiana on the east. Carácas is the capital.

AREA AND POPULATION. Venezuela has an area of 393,874 square miles; population, according to the census of December, 1926, 3,026,878, as compared with 2,411,952 in 1920. The population of Carácas in 1926 was 135,253, and of other large cities: Maracaibo, 74,767; Valencia, 36,804; Barquisimeto, 23,109; and San Cristobal, 15,295. Official vital statistics for 1927 showed 14,242 marriages, 90,745 births, 58,876 deaths, 21,672 immigrants (1926), and 16,552 emigrants (1926). The increase due to migration in 1927 was 3545.

EDUCATION. According to the latest available statistics, those for December, 1926, school registration in the various types of schools was as follows: Government primary schools, 63,747, and average attendance, 45,847; 341 private schools, 15,302; 236 municipal schools, 10,473; 254 state schools, 9762; special schools, 1618; secondary schools, 588; higher schools, 716.

PRODUCTION. Although Venezuela, since the rapid development in the petroleum industry, is no longer entirely dependent on agricultural crops for prosperity, nevertheless, aside from the oil region around Lake Maracaibo, the country's commercial stability still rests upon the two principal crops, coffee and cacao. Estimates of the 1927 coffee crop placed the yield below that of the poor crop of 1926, in which year 1,012,600 bags of 60 kilos each were exported. The smaller crop in 1927 was caused by an overabundance of rain during the early part of the growing season. The 1927 cacao crop was larger than was at first expected, and exceeded the poor yield of 30,000,000 pounds in 1926, although it was considerably below the 50,000,000 pounds produced in 1925. Sugar is the third export crop, with a yearly yield of around 100,000 tons. The annual crop of cotton is about 20,000 bales; on account of the growing demand from local mills, production is being increased although considerable quantities are still imported. Tobacco is produced principally for local consumption as well as rice, corn, beans, and wheat.

The principal mineral resources consist of gold, copper, asphalt, and petroleum. The last is by far the most important, Venezuela ranking third among the producing countries. The output in 1927 was 64,400,000 barrels, as compared with 37,226,000 barrels in 1926. Unusual progress in the development of the petroleum industry occurred in 1927, in spite of a curtailed construction and drilling programme induced by world overproduction, as well as the lack of sufficient storage and tankers for shipping the oil. Asphalt production in 1927 was 55,906 metric tons; copper smelter output, 136 metric tons; gold production, 43,174 fine ounces. Venezuela has no large factory industries, although the number of establishments is large. The principal manufactures are textiles, sugar, petroleum products, cigarettes, beverages, soap and candles, shoes, glass, furniture, paper, cordage, dairy products, and matches. Petroleum products are becoming increasingly important and a number of small refineries are functioning.

COMMERCE. Official statistics of foreign trade of Venezuela for the calendar year 1927, published in December, 1928, indicated that the value of exports during the year was approximately \$84,288,000 while imports totaled \$69,005,000, leaving a favorable balance of trade amounting to \$15,283,000. Revised figures published at the same time for 1926 gave exports for that year of \$75,364,000 and imports of \$78,600,000, resulting in an unfavorable balance of \$3,236,000. The United States in 1927, as in 1926, supplied more than 50 per cent of Venezuela's imports, with a total value of approximately \$36,056,000.

FINANCE. The budget for the fiscal year ending June 30, 1929, was signed by the President on June 25, 1928. Total revenues and expenditures were calculated at 195,450,000 bolívares, or about 84,000,000 bolívares in excess of the budget for 1927-28. Included in the authorized expenditures was an item of 36,000,000 bolívares for the establishment of two new governmental banks which were opened on July 1, 1928. The total debt of the Republic at the end of 1927 was 77,900,526 bolívares.

COMMUNICATIONS. There are 660 miles of railways, practically all owned by private companies. In 1927, 2,681,000 passengers were carried, gross receipts were 18,007,794 bolívares, total expenditures, 14,126,816 bolívares, and 401,444,505 kilos of freight were carried. On May 1, 1928, following the completion of necessary changes, electric train service was inaugurated on the La Guaira-Carácas Railway, and as a result the company announced a reduction in passenger fares and freight rates. Under the new schedule more frequent trains were to be run each way. The railroad distance is approximately 22 miles, the rise in altitude being 2952 feet. The number of vessels with cargo entering Venezuelan ports in foreign trade in 1926 was 1963 of a capacity of 2,460,000 net registered tons. Clearances of vessels with cargo were 3797 of a capacity of 4,720,000 tons, the marked difference as compared with entrances being largely due to the outgoing movement of petroleum.

GOVERNMENT. According to the constitution of July 1, 1925, the executive power is vested in the President, who acts through a responsible ministry, and who is elected by Congress for seven years; and the legislative power is vested in the Congress, consisting of the Senate and the Chamber of Deputies, the former of 40 members (two from each state) elected for three years, and the latter of one deputy for every 35,000 inhabitants in each state and one more for an excess of 15,000, also elected for three years. President in 1927, General Juan Vicente Gomez (elected May 3, 1922, for the period 1922-1929).

HISTORY. General Gomez had rather a stormy year in 1928. He was one of the original dictators of South America and ruled with an iron hand, although the tremendous influx of wealth due to the discovery of oil had rather upset the country and brought about unrest among the poorer classes and in some sections of the army. Early in April, an abortive revolt occurred in which some parts of the army participated. It was put down, without much bloodshed, by loyal troops. In some quarters it was charged that foreign concessionaires were stirring up trouble in the hope that their governments would intervene and protect

their investments in the country. There was, however, no direct proof for any foundation of these charges. Whatever the reasons, there seemed to be an unsettled state of affairs in the country, because from time to time there appeared in the press statements to the effect that the rule of General Gomez was being seriously threatened and a return to constitutional government was a possibility.

VERMONT. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 352,428. No later estimate had been prepared. The capital is Montpelier.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Hay	1928	927,000	1,497,000 *	\$17,804,000
	1927	935,000	1,421,000 *	16,581,000
Potatoes	1928	21,000	2,982,000	2,535,000
	1927	21,000	3,255,000	4,069,000
Corn	1928	80,000	3,520,000	3,872,000
	1927	84,000	3,276,000	3,440,000
Oats	1928	79,000	2,686,000	1,880,000
	1927	83,000	3,237,000	2,104,000

* tons.

MINERAL PRODUCTION. Stone quarrying was active in Vermont in 1926. There were quarried 330,230 short tons of stone, as against 283,030 in 1925; the value of the output was \$9,244,465 for 1926 and, for 1925, \$8,958,846. Slate quarrying, classed separately, was second in importance and was active both in 1926 and in 1927. The slate production of 1927 was estimated at \$4,108,911; that of 1926 at \$4,267,041. Of no other mineral did the yearly production reach \$1,000,000. That of lime was 57,000 short tons (estimated) for 1927, and for 1926, 56,378; in value, \$557,000 for 1927 (estimated) and \$677,944 for 1926. Tale was produced in 1926 valued in excess of half a million dollars, and the production of 473,200 pounds of copper, in value \$66,248, was reported. The total value of the mineral products of the State was \$14,955,161 for 1926; for 1925, \$14,408,933.

FINANCE. State expenditure in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, was: for maintenance and operation of governmental departments, \$4,910,879 (of which \$495,915 was aid to local education); for interest on debt, \$84,506; for permanent improvements, \$2,057,411; total, \$7,052,796 (of which \$3,512,903 was for highways, \$1,551,029 being for maintenance and \$1,961,874 for construction). Revenue was \$7,209,368. Of this, property and special taxes formed 38.2 per cent; departmental earnings and charges for officials' services, 5.5 per cent; sales of licenses and taxation of gasoline, 41.0 per cent. Property valuation was \$315,365,500; State taxation thereon, \$1,016,573. Net funded State debt on June 30, 1927, was \$1,693,532.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 1056.82. No construction of additional railroad trackage in 1928 was reported.

EDUCATION. C. H. Dempsey, State Commissioner of Education, stated at the end of 1928, in the *Journal* of the National Education Association, that the work of standardizing rural schools had progressed, there being over 400 such schools standardized as to building, equipment, teaching and administration. The school population for 1927, as reported by him, was 76,020; there were

enrolled in the public schools of the State in the academic year 1927-28, 64,529 pupils. Of these, 52,254 were in elementary schools and 12,725 were in high schools. There was expended for public-school education in the State in that year the sum of \$4,598,849.09.

CHARITIES AND CORRECTIONS. The Department of Public Welfare, under an appointed Commissioner, exercises direction of State institutions and a variety of other functions, including child-care supervision, the granting of mothers' pensions, probation, and parole. The State institutions under the Board's care in 1928 were: Vermont State Hospital, Waterbury; Vermont Industrial School (delinquents), Vergennes; State School for the Feeble-Minded, Brandon; Vermont Sanatorium (indigent tubercular), Pittsford; Women's Prison and House of Correction, Rutland; and the State Prison and House of Correction, Windsor.

POLITICAL AND OTHER EVENTS. The calamitous floods of 1927 led to the creation of a special committee, recommended by the Public Service Commission and appointed by Governor Weeks, to survey the possibilities of flood control in the State. Early in its work, this committee recommended that State agencies dispose of the quantities of wreckage left stranded along the river banks, and pointed out that a subsequent flood, even of comparatively small proportions, might float such wreckage and bear it down against bridges, if it should be allowed to remain. Particular attention was given to the Winooski River, and efforts were made to determine to what extent flood hazards might be reduced in the State by the construction of reservoirs with possibilities of power output. An issue of \$5,000,000 of 3¾ per cent bonds of the State for the reparation of property damaged by the 1927 floods was sold in January, through J. P. Morgan & Company, under unusual circumstances, the bankers, notably, exacting no commission. The White River Railroad, destroyed by the flood, resumed operations in the latter part of 1928, the necessary capital being locally subscribed. The State acquired in the fiscal year ending June 30, 1530 acres of forest land by purchase and 900 by gift, bringing its total holdings to 33,725 acres. See FLOODS.

ELECTION. The popular vote for President in the State, at the election of November 6, was: Hoover (Republican), 90,404; Smith (Democratic), 41,440. The Democratic vote, though completely outdistanced, was in its turn more than twice that in either of the last two preceding presidential elections. The Republican vote likewise reflected United State Senator Frank L. Greene for the ensuing regular term; returned to the House of Representatives the two incumbents, both Republican; and reelected Governor John E. Weeks.

OFFICERS. Governor, John E. Weeks; Lieutenant-Governor, Stanley C. Wilson; Secretary of State, Rawson C. Myrick; Treasurer, Thomas H. Cave; Auditor, Benjamin Gates; Attorney-General, J. Ward Carver; Commissioner of Education, C. H. Dempsey.

JUDICIARY. Supreme Court: Chief Justice, John H. Watson; Associate Justices, George M. Powers, Leighton P. Slack, Sherman R. Moulton, and Harrie B. Chase.

VERMONT, UNIVERSITY OF. An endowed institution of higher education at Burlington, Vt., receiving some State aid; founded by Ira Allen

in 1791. The 1928 autumn enrollment was 1310, of whom 581 were women and 729 men. The total enrollment was distributed as follows: arts and sciences, 804; medicine, 140; engineering, 138; agriculture, 111; graduate students, 12; two-year State teacher-training course, 105. The summer-session registration in 1928 amounted to 912. The library contained 133,000 volumes. The endowment amounted to \$1,900,000, and the income for the year to \$600,000. President, Guy W. Bailey, LL.D.

VESSEL, NAVAL. See NAVAL PROGRESS.

VESTRIS, WRECK OF. See SAFETY AT SEA.

VETERANS' BUREAU. See UNITED STATES.

VETERINARY MEDICINE. The year 1928 saw no new invasion of the United States by livestock diseases from abroad, and was marked by a steady advance in the control and eradication of some of the most important maladies, particularly tuberculosis, Texas fever, and dourine of cattle. Particular mention should be made of anaplasmosis of cattle as a disease that became of major importance. Much progress was made in the advancement of knowledge of some of the diseases as applied especially to their diagnosis and to prevention through immunization.

There was a marked increase in the attendance at accredited veterinary colleges of which there are twelve. The Federal Agricultural Appropriation Act, which became effective July 1, included \$5,744,710 for the campaign against tuberculosis and paratuberculosis; \$20,000 for work with anaplasmosis of cattle; \$5000 for a loco weed survey in the Southwest; and \$40,000 for additional studies of animal parasites. The appropriation for work with infectious abortion was \$50,625; and for cattle-tick eradication, \$720,400; dourine eradication, \$27,800; and hog-cholera work, \$464,670.

Among the more prominent investigators in animal pathology of which the year saw the passing were: Dr. Ernest C. Schroeder, known for his work on tuberculosis and infectious abortion, on January 24 at the age of 63 years; Dr. Charles F. Dawson, known for his work on anthrax, on February 26 at the age of 65 years; and Dr. Samuel H. Burnett, author of *The Clinical Pathology of the Blood of Animals*, on November 18 at the age of 59 years.

LIVESTOCK TUBERCULOSIS ERADICATION. Marked progress was made in practically all States in the cooperative eradication work with tuberculosis of livestock, in its thirteenth year in 1928, in which 923 veterinarians were regularly engaged. There was a large increase in the number of cattle tested and in the growth of the area eradication work, to which particular attention was given. Much progress also was made in systematizing plans for the control of avian tuberculosis. The Federal appropriation for the year ended June 30, 1928, was \$5,964,000 and the combined State appropriations were more than \$13,000,000, these funds making possible an increase of 16 per cent in the number of cattle tested.

The plans for the work included (1) the eradication of tuberculosis under the accredited herd plan; (2) the area plan; (3) the eradication of the disease from swine; (4) investigations relative to interstate shipments; and (5) tuberculosis in fowls. There has also been added work looking for the control of paratuberculosis, known as Johne's disease.

The area work continued to grow, approximately 77 per cent of the total number of cattle tested having been tested under this plan. At the conclusion of the fiscal year, 1119 counties and the District of Columbia had engaged in area work, an increase of 166 counties, or approximately 17 per cent over the number for the preceding year. The modified accredited counties increased in number under the plan in effect by 187, and at the close of the year there were 527 such counties.

At the close of the fiscal year on June 30, there were 2,290,732 herds and 21,418,977 head of cattle under supervision, or approximately 35 per cent of the entire number of cattle in the United States. In 17 States, more than 50 per cent of the cattle was under careful supervision. On July 1, 169,356 herds were listed as fully accredited. The tuberculin test was administered to 11,281,490 cattle, or more than a million and a half in excess of the preceding year's record, of which 2.3 per cent reacted. There were on June 30, 169,356 herds finally accredited as tuberculosis free, having passed two or more tests, an increase of 38,880 accredited herds in one year.

The work of eradicating tuberculosis from swine and poultry was continued with satisfactory progress. Of the 226,104 flocks containing approximately 20,400,000 fowls inspected in 28 States, nearly 14,000 were found to be infected with tuberculosis. It was found that the avian type may be perpetuated in swine independent of contact with infected chickens or contaminated ground.

The State of North Carolina completed the tuberculin testing of all cattle in the last four of its 100 counties early in October, and won the distinction of being the first State to have 100 per cent of its counties classed as "modified accredited areas" in which areas not more than 0.5 per cent of the cattle are tuberculous and from which all animals reacting to the test have been removed for slaughter. Maine was following closely, having 13 of its 16 counties already in the modified accredited areas.

Since the campaign was inaugurated in 1917, the degree of infection in cattle throughout the United States had been reduced from 4 to nearly 2 per cent, and a total of 581 counties and 21 townships in 11 States have been placed on the modified accredited list.

HOG CHOLERA. The disease was again prevalent in many States, particularly in September, October, and November, when its greatest ravages occur. Eleven States reported more cholera than in the preceding year, five as approximately the same, and four as less. The total number of outbreaks reported from all sources during the fiscal year was 6689, a marked decline from 11,555, the corresponding number for the preceding year.

TEXAS-FEVER AND CATTLE-TICK ERADICATION. The progress in cattle-tick eradication by the Federal Department of Agriculture in cooperation with State and county officials and stock owners continued. During the fiscal year ended June 30, the following areas were released from Federal quarantine as a result of the work conducted therein: 1 county in Alabama; 5 counties, the remainder of 2 counties, and parts of 2 counties, in Arkansas; 2 counties and the remainder of 3 counties in Florida; 1 county and the remainder of 1 county in South Carolina; 8 counties and part of 1 county in Texas; and 1

county in Virginia. During this period, one parish in Louisiana was requarantined. A total of 760 of the 985 counties and parishes in the 15 States quarantined on July 1, 1906, have been released as tick free as a result of the work that has been under way for 22 years. In the course of the year's work, 17,627,260 inspections or dippings were made and more than 15,000 dipping vats were used. The Louisiana parishes of West Baton Rouge, Assumption, and part of Ascension were kept tick free as a result of the restocking work conducted in the Mississippi flood areas in that State where all cattle had been forced out and ticks destroyed by the great overflow. The eradication work was furthered by the new Federal regulation, promulgated under authority of the Crisp Act, which became effective on May 1. This regulation provides for the dipping and certification as tick free of all cattle shipped from the quarantined area for immediate slaughter, similar to that required in the interstate shipment of other cattle.

DOURINE ERADICATION. The work of eradicating dourine was continued on the Navajo Indian Reservation in Arizona and in a small section of northern Montana, the only areas in which the disease was known to exist. Only one-third as many reactors were found on the Navajo Reservation as in the previous year and only twelve, or 1.1 per cent, of the number tested in Montana, indicating marked progress in the work. Of the 14,272 samples of blood serum tested, 3.2 per cent gave positive reactions.

SCABIES ERADICATION. There was an increase in the number of sheep found, upon inspection, to be affected with scabies by approximately 27 per cent over the preceding year. There were 22,935,543 inspections made in the field and 3,474,822 dippings supervised. Several affected flocks were located in West Virginia and Maryland where the disease had not previously been reported. In work with cattle scabies, 3,267,020 were inspected and 765,322 dippings supervised. There was an increase in 4 States in the number of animals reported affected, while less infection was found in 6 States. Outbreaks were reported in Arizona and California, where none occurred during the preceding year. In Texas, 568 of the 11,934 goats inspected were found affected and in Montana 369 of the 4875 horses that were inspected.

INFECTIOUS ABORTION AND UNDULANT FEVER (BANG). This disease continued to hold its place as the most important affection of cattle, its annual financial toll in the United States; as estimated by the chief of the Federal Bureau of Animal Industry, probably exceeding \$50,000,000. It was pointed out that ten years ago the losses from tuberculosis and abortion were about the same, but in this decade the tuberculosis losses had been reduced by one-half, while the abortion losses had doubled. The identification of the abortion organism with undulant fever (Bang) in man had resulted in the recognition of the occurrence of this disease in increasing frequency. Carpenter and Boak working in New York found that the causative organism was destroyed by exposure for 20 minutes to a temperature of 140° Fahr. as commonly employed for the pasteurization of milk, the porcine strain being most resistant. Much progress was made in control work. Graham, Tunnicliff, and McCullough in Illinois found that the agglutination test for the detection of the abortion organism is as ac-

curate a method of diagnosis as is the tuberculin test for tuberculosis. Work in California has demonstrated that the vaccination of cows with living virulent cultures of the causative organism will confer a resistance to this type of abortion for at least three regular gestation periods.

ANAPLASMOSIS. This malignant febrile disease of cattle was increasing in importance. Though occurring chiefly in the Southern States, including Florida, Louisiana, and Texas, it was found in Oklahoma and Kansas, and as far west as Nevada and California. It apparently had no connection with tick fever. Giltner reported that in an outbreak in Florida as high as 30 per cent of the herd was lost in some instances, while Stiles found a 26 per cent mortality in Oklahoma and a 39 per cent loss in Kansas. Hiltz in Nevada found its transmission to take place through the dehorning clippers.

FOOT-AND-MOUTH DISEASE. The United States remained free from invasion by this malady of the cloven-footed animals which takes a heavy toll in all the countries in which it is firmly established. A special report of 172 pages was issued by the American Foot-and-Mouth Disease Commission which had conducted extensive investigations of the disease in Europe. The commission indorsed the slaughter and quarantine method, with supplementary safeguards, regularly used for eradicating the disease when it has appeared in the United States, as not only the most effective but also the most economical. A third progress report was issued during the year by the British Research Committee.

BACILLARY WHITE DIARRHEA OF THE FOWL. The activity in research on this disease of the fowl continued unabated, it being aimed particularly at improvement of means of detecting the infection. Considerable attention was given to the simpler pullorin test, but thus far the agglutination, or blood, test had been found to be the more reliable method. Mathews in Indiana found that accidentally broken and consumed eggs from infected fowls offers the best explanation of the spread of the disease in mature fowls. Olney reported the loss of 125 rabbits in Nebraska through having been fed incubated infertile eggs containing *Salmonella pullorum*. Dalling, Mason, and Gordon in England reported the isolation of the causative organism from sparrows collected in chicken runs in which were infected chickens. An outbreak of the disease in a flock of baby turkeys was reported by Hewitt in Minnesota, this being the first definite record of its occurrence in the turkey.

FOWL TYPHOID. In Delaware, Palmer and Baker found that the use of living avirulent strains of the fowl typhoid organism reduced the mortality by one-third and that the method is of considerable economic value. Chicks hatched from parents both of which had survived an acute infection of fowl typhoid showed considerable increased resistance to the infection in work by Lambert and Knox in Iowa.

FOWL PARALYSIS. Gildow, working in New Hampshire, was led to conclude that coccidiosis is in most instances in that State closely associated with paralysis in the fowl although there is a form which is not connected with any of the internal parasites. Studies in Indiana led to the conclusion that the virus of the disease may be transmitted through the egg.

BLACKHEAD OF TURKEYS. Work in Connecticut by Rettger and Kirkpatrick showed that, by the

use of the rotation system, turkeys can be reared in successive years without serious losses from blackhead. They conclude that chickens and other barnyard fowls transmit the disease and that ground that has been occupied by them constitutes an immediate source of infection. The rotation method, in which poultts were moved to new ground about every week, again proved effective in Rhode Island.

FOWL POX. Much progress was made in immunization work with this disease as reported by Beach in California and Pyle in Massachusetts.

A NEW DISEASE OF FOWLS. An important disease of the fowl not previously recognized was studied and reported upon by Kaupp, Dearstyne, et al. in North Carolina to which the name infectious purulent enteroproventriculitis was given. It was found to be due to a filterable virus.

PLANT POISONING. It was found by Marsh, Clawson, and Roe that coyotillo (*Karwinskia humboldtiana*), a plant growing in southwestern Texas and in Mexico, produces a more or less complete paralysis in cattle, sheep, goats, pigs, and chickens that feed upon it and probably also in horses and swine. In severe cases, recovery seldom occurs. Fleming and Dill found in Nevada that the poisoning of sheep and cattle that takes place immediately after drinking from mountain streams is caused by the release of the poison from the leaves of the western chokecherry on which they have fed, by the excess of water. Fleming, Miller, and Vowter reported that the poisoning of sheep on the range in Nevada by greasewood is undoubtedly due to the oxalic acid content. The investigations of Couch led him to conclude that tremetal is the toxic constituent of richweed causing trembles and milk sickness. The seed of the coffee-bean plant, a native of Mexico naturalized in the northern part of Florida and in other Gulf States, often being found in back yards, was discovered by Shealy and Thomas to be poisonous to, and causing the loss of, poultry. Roderick and Schalk, finding in North Dakota that sweet-clover poisoning cannot be detected from the external appearance of the animal until considerable damage has been done and that rabbits are more susceptible than cattle, made use of these rodents in detecting the moldy hay. When the death of the rabbit is caused in six or seven days after feeding upon the hay, it will seriously affect the cattle, but, if the rabbit feeds upon the hay for two weeks or more before it dies, the hay will be safe to feed to cattle.

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Animal Parasitology (Philadelphia, 1927, 8th ed., rev. and enl.); E. Weber, *Die Krankheiten des Rindes* (Berlin, 1927).

VICTORIA. A state of the Australian Commonwealth, situated in the southeastern part of the island continent. Area, 87,884 square miles; population, according to the census of 1921, 1,531,280; estimated June 30, 1927, 1,726,445. Capital, Melbourne, with an estimated population, including suburbs, on Dec. 31, 1926, of 944,400. The other large cities with their populations on that date, were Ballarat, 41,550; Geelong, 40,880; Bendigo, 33,830. The movement of population in 1926 was: Births, 35,362; deaths, 16,355; marriages, 13,405; immigration (by sea), 88,026; emigration (by sea), 73,799.

Public instruction is secular, free, and compulsory for children between the ages of 6 and 14. In 1925 there were 2525 state schools with 7020 teachers, a total enrollment of 255,101 scholars, and an average attendance of 175,131. The area and yield of the principal crops in 1927 were: Wheat, 2,915,000 acres, 46,886,000 bushels; oats, 303,000 acres, 4,884,000 bushels; barley, 89,000 acres, 1,921,000 bushels; potatoes, 66,000 acres, 163,000 tons; hay, 1,081,000 acres, 1,388,000 tons; vines (1926), 40,712 acres, 1,637,274 gallons of wine. The wool industry is of great importance. At the end of March, 1927, there were 14,919,653 sheep, and the value of the wool clip in the preceding year was £7,082,820. The mineral resources are abundant, especially coal and gold ores. The output of the former in 1926 was 581,001 tons valued at £657,798; of the latter, 49,078 fine ounces valued at £208,471. The value of the total quantity of gold produced from 1851 to 1926 was estimated at £302,548,425. No later statistics on manufacturing were available than those given in the preceding YEAR BOOK.

In 1926-27 the total value of overseas imports was £55,559,214; of overseas exports, £34,682,813. The revenue in 1927 amounted to £26,377,928; expenditure, £27,019,132. Victoria has a debt, incurred in the construction of public works, which amounted on June 30, 1926, to £140,264,989. The total railway mileage in 1925-26 was 4682 miles, as compared with 4539 in 1924-25.

The executive power is vested in a governor, acting through a responsible ministry, and the legislative power in a parliament of two houses; namely, the legislative council of 34 members elected for six years and subject to property qualifications, and a legislative assembly of 65 members elected for three years (unless sooner dissolved) by universal male and female suffrage. The Governor in 1928 was Lieut.-Col. Lord Arthur H. T. Somers, Premier, Treasurer, and Minister of Markets, E. J. Hogan. Mr. Hogan's government (Labor) resigned on November 21 and was succeeded by a Nationalist ministry led by Sir William McPherson.

VILLARD, MRS. FANNY GARRISON. American philanthropist and reformer, died at Dobbs Ferry, N. Y., July 5. She was born at Boston, Mass., Dec. 16, 1844, and was the daughter of William Lloyd Garrison, famous advocate of women's rights, world peace, temperance, and the abolition of slavery. As a young girl, she read the proofs for *The Liberator*, the militant weekly of her father, and her contact with the reformers associated with Mr. Garrison aided in developing the crusader spirit that animated her long life. In 1866 she was married to Henry Villard, jour-

nalist and financier, who died in 1900. Mrs. Villard was one of the first women in the United States to partake actively in the movement for woman suffrage; in this, she was closely associated with Anna Shaw, Mrs. Carrie Chapman Catt, and other well-known leaders. She appeared before legislative bodies and other assemblages for the cause, and was an effective speaker. When woman suffrage was won, she was able to devote more time to another cause that was close to her heart, that of international peace. She founded the Woman's Peace Society, an organization based on non-resistance theories. She was also active in numerous philanthropies in New York and elsewhere, and in educational movements.

VIOLINISTS. See Music.

VIRGINIA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,309,187. The estimated population on July 1, 1928, was 2,575,000. The capital is Richmond.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Corn	1928	1,642,000	45,155,000	\$45,155,000
	1927	1,626,000	47,967,000	44,130,000
Tobacco	1928	186,000	111,600,000 ^a	19,180,000
	1927	177,000	127,971,000 ^a	22,828,000
Hay	1928	1,084,000	1,479,000 ^b	22,522,000
	1927	1,100,000	1,501,000 ^b	23,929,000
Potatoes	1928	151,000	21,593,000	10,796,000
	1927	180,000	19,760,000	25,688,000
Sweet potatoes	1928	44,000	6,336,000	6,019,000
	1927	43,000	5,805,000	4,934,000
Wheat	1928	673,000	9,758,000	13,173,000
	1927	687,000	8,381,000	11,063,000
Apples	1928	.....	16,100,000	13,685,000
	1927	.....	6,600,000	8,910,000
Peanuts	1928	152,000	138,320,000 ^a	6,500,000
	1927	152,000	123,120,000 ^a	5,540,000
Cotton	1928	79,000	44,000 ^c	4,004,000
	1927	64,000	31,000 ^c	3,100,000
Oats	1928	182,000	4,641,000	2,970,000
	1927	186,000	3,999,000	2,559,000

^a pounds, ^b tons, ^c bales.

MINERAL PRODUCTION. Coal production furnishing the greater part of the State's mineral total year by year, receded for 1927 from the high aggregate of 1926 to about the level of 1925. There were mined in 1927 12,916,042 net tons of coal, and in 1926, 14,133,386 tons; in value, \$23,203,000 for 1927 and \$27,203,000 for 1926. Of the 1927 production, 522,497 tons were coked at the mines, in Wise County. No by-product coke operations were reported up to the end of 1927. Beehive coke ovens in the State, however, produced 910,000 short tons of coke in 1927, as against 370,983 in 1926, when the output was valued at \$1,716,716. Blast-furnace output of pig iron fell off to 84,920 long tons for 1927, from 105,019 for 1926; in value, \$782,538 for 1927 and \$2,322,451 for 1926. The iron mines of the State, on the other hand, shipped more iron ore in 1927, the quantity being 66,897 long tons, as against 47,703 in 1926; in value, \$172,877 in 1927 and \$162,446 in 1926. The ore smelted came largely from outside the State. Clay products attained \$3,755,980 for 1926, and for 1925, \$3,909,634. Stone was quarried to the value of \$3,504,671 in 1926 and of \$3,224,258 in 1925. The lime output of 1927 was 172,000 short tons (estimated) and that of 1926, 188,696; in value, \$1,250,000 (estimated) for 1927 and for 1926, \$1,453,095. Lead, zinc, manganese, and manganiferous ores were produced in minor amounts. The total value

of the State's mineral products was \$46,136,458 for 1926; for 1925, \$41,038,393.

FINANCE. State expenditure in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, was: for maintenance and operation of State departments, \$23,762,635 (of which \$5,710,371 was aid to local education); for interest on debt, \$763,839; for permanent improvements, \$12,758,777; total, \$37,285,251 (of which \$15,711,805 was for highways, \$5,176,483 being for maintenance and \$10,535,322 for construction). Revenue was \$38,995,736. Of this, property and special taxes formed 35.1 per cent; departmental earnings and charges for officials' services, 9.6 per cent; sales of licenses and taxation of gasoline, 39.8 per cent. Property valuation was \$765,373,554; State taxation thereon, \$5,877,960, intangible property alone being taxed. Net funded State debt on June 30, 1927, was \$26,637,392.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 4528.15. No construction of additional railroad trackage in 1928 was reported.

EDUCATION. In the course of 1928, there occurred considerable improvement in rural schools in certain respects. The tendency was to raise the standard of qualification for the teachers and to lengthen school terms. The number of pupils having the benefit of a full nine-month term showed an increase. For the year 1927-28, the total of the population of school age was placed at 701,534. There were enrolled in the public schools of the State 553,717 pupils, of whom 490,672 were in the primary schools and 63,045 in the high schools. The total expenditure of the year for public-school education in the State was \$23,741,064. This total included \$2,441,458 of payments on indebtedness. The salaries of all public-school teachers averaged \$827 a year.

CHARITIES AND CORRECTIONS. The State Board of Public Welfare had control or supervision over State and county institutions of care and custody. Among its branches were a division of county and city organization and a division of child care. An associated State agency, the Virginia Industrial School Board, controlled a group of industrial schools. Hospitals for the insane were under separate boards of directors. The State Prison Board had authority over the penitentiary. Among the State institutions were industrial schools at Richmond (girls), Beaumont (boys), Peaks Turnout (colored girls), Hanover (colored boys); hospitals for the insane at Petersburg (colored), Williamsburg, Marion, Staunton; Virginia State Epileptic Colony, at Colony Post Office; State Penitentiary, Richmond. The penitentiary had on Jan. 1, 1928, 2135 prisoners. State sanatoria for the tuberculous were under the oversight of the Department of Health; they were three in number, situated at Catawba, Charlottesville, and Burkeville. The State Diseased and Cripple Children's Hospital was under a separate board of trustees.

LEGISLATION. The State General Assembly convened January 10 in regular session, and adjourned March 10. It extended the previously undertaken reform of the fiscal system by repealing taxes to the total amount of about \$1,400,000, which were judged harmful to State prosperity. The Hall-Parker measures, which were enacted, provided a system of insurance laws and placed the insurance companies under the control of the State Corporation Commission. There were pro-

vided a standard policy, a rate-making bureau, a commission to deal with the subject of compulsory automobile insurance and statutes governing insurance brokers. The law governing the sale of investments, the State "blue sky" law, was amended.

Taxes on railroads were increased by \$100,000 and by compromise legislation railroad interests were induced to withdraw suits attacking the constitutionality of the State franchise tax. The sum of \$1,000,000 was appropriated toward the creation of a Shenandoah National Park. State appropriation for schools was augmented by \$625,000 a year for primary and secondary school operating expenses and by \$3,000,000 for construction of building at institutions of higher learning. A water-power bill was enacted. The Constitutional amendments were repassed and submitted to the popular vote for ratification at a special election. A law was adopted to increase by 1587 miles the extent of the State highway system, thus taking that many miles out of the hands of the counties. An anti-lynching measure and a law to promote aviation and the building of airports were enacted.

ELECTION. The popular vote of the State gave a majority for a Republican presidential candidate, for the first time since 1872, at the election of November 6. The vote for Hoover (Republican) was 164,609; that for Smith (Democratic), 140,146. The Smith vote was approximately of the same size as that cast for Davis in 1924, but a large increase in the total vote apparently went into the Hoover column. United States Senator C. A. Swanson, Democrat, was reelected in spite of the adverse majority on the presidential ticket. Republican candidates, however, captured two seats in the prevailing Democratic delegation of the State to the House of Representatives.

OFFICERS. Governor, Harry F. Byrd; Lieutenant-Governor, Junius E. West; Secretary of the Commonwealth, M. A. Hutchinson; State Treasurer, John M. Purcell; Auditor of Public Accounts, C. Lee Moore; Attorney-General, John R. Saunders; Superintendent of Public Instruction, Harris Hart; Commissioner of Agriculture, George W. Koiner.

Judiciary. Supreme Court of Appeals: President, Robert R. Prentiss; Associate Justices, J. F. West, Preston W. Campbell, R. H. L. Chichester, H. W. Holt.

VIRGINIA, UNIVERSITY OF. A non-sectarian institution of higher education at Charlottesville, Va., founded in 1819. The enrollment for the autumn term of 1928 was 2098, distributed as follows: College, 1147; graduate, 163; education, 107; engineering, 156; law, 285; medicine, 240. For the 1928 summer session, there was an enrollment of 2792. The officers of instruction numbered 290, with 9 in charge of university departments and 28 more in academic schools. The productive endowment of the university amounted to \$10,000,000, the annual State appropriation to \$400,000, and total annual income to \$1,741,352. There were approximately 140,000 volumes in the library. President, Edwin Anderson Alderman, D.C.L., LL.D.

VIRGIN ISLANDS. The name given by the United States Government to the former Danish West Indies, purchased by the American Government from Denmark by the treaty proclaimed Jan. 25, 1917; also a group of islands belonging to the British colony of the Leeward Islands. See **LEEWARD ISLANDS.** The Virgin Islands of the

United States consist chiefly of the Islands of St. Thomas, St. Croix, and St. John, and have a total area of about 132 square miles, with a population, according to the census of Nov. 1, 1917, of 26,051, of which 80 per cent was Negro, 13 per cent of mixed races, and 7 per cent white. St. Thomas, with an area of 28 square miles, had 10,191 inhabitants; St. Croix, 84 square miles, 14,901 inhabitants; and St. John, 20 square miles, 959 inhabitants. St. Thomas, the chief port, has coaling and oil-fueling stations. Education is compulsory. For the fiscal year 1925-26, the trade of the islands was: Imports, \$2,531,404, exports, \$1,119,706. The government of the island is strictly civil. Early in 1927, full American citizenship was granted to the natives of the Virgin Islands. Governor in 1928, Capt. Waldo Evans, U. S. N. (Ret.).

VITAL STATISTICS. The U. S. Bureau of the Census reported that 1,236,949 deaths occurred in 1927 within the death registration area of continental United States, representing a death rate of 11.4 per 1000 population—the lowest since 1900 and compared with 12.2 in 1926. This area in 1927 comprised 42 States, the District of Columbia, and 21 cities in nonregistration States, with a total estimated population on July 1, 1927, of 108,327,000, or 91.3 per cent of the estimated population of the United States.

The principal decreases in death rates in 1927 were: from pneumonia (all forms) from 103 to 81 per 100,000 population, influenza, from 41 to 23, tuberculosis (all forms), from 87 to 81, diarrhea and enteritis (under 2 years), from 27 to 22, nephritis, from 98 to 93, measles, from 8 to 4, and diseases of the heart from 199 to 196. An increase was shown in 1927 in the death rate from automobile accidents, from 18 to 20 per 100,000 population.

The accompanying table on page 799 shows for the death registration area in continental United States in 1926 and 1927 the number of deaths and the death rates per 100,000 population from leading causes.

MORTALITY BY STATES. Of the 41 States which show for both years in the census tables, all but five (Arizona, California, Colorado, Oregon, and Wyoming) had lower rates in 1927. The highest rate in 1927 (13.9) was for California, New Hampshire, and Vermont, and the lowest (7.1) was for Idaho.

Of the 11 States shown by color in 1927, the highest rate for white (11.8 per 1000 population) was for Maryland, and the highest for colored (21) was for Kentucky; the lowest rates for both white and colored were for Arkansas (8.4 and 12.8, respectively). The changes in the death rates of mothers from childbirth, or puerperal causes, was very slight in 1927 as compared with 1926. For the 35 States for which figures were available for 1926 and 1927, the rate from puerperal septicemia was 2.4 per 1000 live births for both years, but the rate from other puerperal causes dropped from 4.1 in 1926 to 3.8 in 1927. Of these 35 States, 14 had higher rates from all puerperal causes in 1927. Florida had the highest death rate in 1927 from all puerperal causes (11 per 1000 live births) and Minnesota the lowest (4.4). Of the 10 States which show by color for 1927, the highest rates for both white and colored were for Florida (9 and 15.7 per 1000 live births, respectively); the lowest rate for white (4.5) was for Kentucky, and the lowest for colored (7.2) was for Maryland.

FROM BUREAU OF THE CENSUS, U. S. DEPARTMENT OF COMMERCE
DEATHS AND DEATH RATES IN UNITED STATES

Cause of Death	Deaths in Registration Area		Rate per 100,000	
	Number	Estimated population	1927	1926
All causes ^a	1,236,949	1,285,927	1,141.9	1,222.7
Typhoid and paratyphoid fever	5,905	6,826	5.5	6.5
Malaria	2,875	2,006	2.7	1.9
Smallpox	145	377	0.1	0.4
Measles	4,433	8,607	4.1	8.2
Scarlet fever	2,440	2,662	2.3	2.5
Whooping cough	7,445	9,317	6.9	8.9
Diphtheria	8,426	7,856	7.8	7.5
Influenza	24,471	42,809	22.6	40.7
Dysentery	2,605	2,921	2.4	2.8
Erysipelas	2,567	2,680	2.4	2.5
Lethargic encephalitis	1,326	1,499	1.2	1.4
Meningococcus meningitis	1,705	1,413	1.6	1.3
Tuberculosis (all forms)	87,567	91,568	80.8	87.1
Of the respiratory system	77,195	80,375	71.3	76.4
Of the meninges, central nervous system	3,533	3,788	3.3	3.6
Other forms	6,839	7,405	6.3	7.0
Syphilis ^b	15,976	16,466	14.7	15.7
Cancer and other malignant tumors	103,578	99,833	95.6	94.9
Rheumatism	4,177	4,219	3.9	4.0
Pellagra	5,418	3,854	5.0	3.7
Diabetes mellitus	18,937	18,881	17.5	18.0
Meningitis (nonepidemic)	3,084	3,219	2.8	3.1
Cerebral hemorrhage and softening	91,001	90,832	84.0	86.4
Paralysis without specified cause	5,006	5,732	4.6	5.5
Diseases of the heart	211,976	209,370	195.7	199.1
Diseases of the arteries, atheroma, aneurysm, etc.	23,615	23,698	21.8	22.5
Bronchitis	5,851	6,961	5.4	6.6
Pneumonia (all forms)	87,230	107,797	80.5	102.5
Respiratory diseases other than bronchitis and pneumonia (all forms)	9,111	9,202	8.4	8.7
Diarrhea and enteritis	29,899	35,296	27.6	33.6
Diarrhea and enteritis (under 2 years)	23,382	28,374	21.6	27.0
Diarrhea and enteritis (2 years and over)	6,517	6,922	6.0	6.6
Appendicitis and typhlitis	16,205	15,751	15.0	15.0
Hernia, intestinal obstruction	11,309	11,734	10.4	11.2
Cirrhosis of the liver	8,098	7,591	7.5	7.2
Nephritis	100,163	103,332	92.5	98.3
Puerperal septicaemia	5,715	5,518	5.3	5.2
Puerperal causes other than puerperal septicaemia	9,145	9,540	8.4	9.1
Congenital malformations and diseases of early infancy	73,365	75,239	67.7	71.5
Suicide	14,356	13,410	13.3	12.8
Homicide	9,470	9,210	8.7	8.8
Accidental and unspecified external causes	84,980	82,715	78.4	78.7
Burns (conflagrations excepted)	6,089	6,487	5.6	6.2
Accidental drowning	7,296	6,661	6.7	6.3
Accidental shooting	2,741	2,593	2.5	2.5
Accidental falls	15,152	14,681	14.0	14.0
Mine accidents	2,690	2,825	2.5	2.7
Machinery accidents	2,124	2,224	2.0	2.1
Railroad accidents	6,892	7,026	6.4	6.7
Collision with automobile	1,676	1,556	1.5	1.5
Other railroad accidents	5,216	5,470	4.8	5.2
Street-car accidents	1,452	1,621	1.3	1.5
Collision with automobile	476	464	0.4	0.4
Other street-car accidents	976	1,157	0.9	1.1
Automobile accidents (excluding collision with railroad trains and street cars)	21,160	18,871	19.5	17.9
Injuries by vehicles other than railroad trains, street cars, and automobiles ^c	1,593	1,507	1.5	1.4
Excessive heat (burns excepted)	530	646	0.5	0.6
Other external causes	17,261	17,373	15.9	16.7
All other defined causes	118,314	117,278	109.2	111.5
Unknown or ill-defined causes	19,060	18,708	17.6	17.8

^a Exclusive of stillbirths.

^b Includes tabes dorsalis (locomotor ataxia) and general paralysis of the insane.

^c Includes airplane, balloon, and motor-cycle accidents.

VITAMINS. Hitherto it has been an accepted dictum that the animal must obtain its vitamins from the plant world, but almost simultaneously several investigators—in the University of Copenhagen, Lister Institute (London), and Pennsylvania State College—have arrived at the opposite conclusion, that the B vitamin, at least, may be formed in the alimentary canal of the rat: for although the animal in question is on a vitamin-free diet, yet it does not present any deficiency symptoms and at the same time the B vitamin may be recovered from the intestinal tract. The inference is that, when certain animals are deprived of vitamin, they are capable of forming it from the plant constituents of the food, perhaps by a process similar to that through

which plants are able to form vitamins in nature. See also CHEMISTRY, under *Biological Chemistry*.
NEED OF VITAMINS IN EARLY LIFE. Professor E. Vogt of the University of Tübingen makes a contribution on this subject in the *Klinische Wochenschrift* for Oct. 7, 1928, and has studied especially the newborn child and the nursing. While the vitamin requirement is very great in the young nursing, the newborn child has no immediate need because born with a certain reserve supply taken over from the mother. The need after birth is readily supplied from the mother's milk. The results of depriving human pregnant females of all the known vitamins is not yet known, but in the case of the lower animals tested there is either a disturbance of gesta-

tion or the offspring have development retarded. If pregnant women are fed with foods rich in vitamins, such as cod-liver oil, which guarantees an abundance of vitamins A and D, there is a good outlook for the prevention of habitual abortion, while the intrauterine development of the fetus is favored. The maternal colostrum is of great value for the newborn for it is richer in vitamin than the subsequent milk. The milk, butter, and milk products in general of the grazing animals are characterized by a maximum amount of vitamins. The author favors the use by all pregnant women throughout gestation of ultraviolet-rayed cod-liver oil or levurinose, both rich in vitamins. See **CHEMISTRY, INDUSTRIAL; FOOD and NUTRITION.**

VOCALISTS. See **MUSIC.**

VOLCANIC STUDIES. See **GEOGRAPHICAL SOCIETY, NATIONAL.**

VOLCANOES. See **GEOLOGY.**

VOLUNTEERS OF AMERICA. A non-sectarian philanthropic organization founded by General and Mrs. Ballington Booth, in March, 1896. The society was incorporated on Nov. 8, 1896, under the laws of the State of New York. The society works in harmony with the evangelical churches. No pledge of life membership is required of its members; it promotes its officers on a merit system; its funds are audited at stated periods and balance sheets are issued. The society has over 60 homes or institutions throughout the United States. There are summer camps to the number of 14, and the society owns the property and equipment of most of these. The winter activities of the society embrace all branches of relief work in a number of cities, in conjunction with the gospel mission work. The following record gives some idea of the work accomplished during 1928: There were 133 stations, of which 127 were in urban communities and six in rural areas. There were Sunday schools in connection with 80 stations, reporting 9942 scholars. The indoor meetings for the year numbered 18,428 and those conducted outside were 11,273, making a total of 29,701. The combined attendance at these gatherings was 2,660,288. Employment was furnished 45,824 persons. Meals were given free to 924,377, while 467,837 meals were paid for in cash or by work. Lodgings furnished free numbered 220,017 and beds were given in exchange for work and cash to 234,250. The families visited numbered 80,840. Transportation was given to 14,068 and garments and shoes to 202,523. Thanksgiving and Christmas dinners were supplied to 137,791.

VON NEMES, COLLECTION. See **ART SALES.**

WAGES, INDEX NUMBER OF. See **STATISTICS.**

WAHL, LUTZ. Adjutant general of the U. S. Army, died at Washington, D. C., December 30. Born at Milwaukee, Wis., Nov. 2, 1869, he was graduated from the U. S. Military Academy in 1891, and commissioned second lieutenant in the Infantry on June 12 of that year. Rising through the successive grades, General Wahl served in the Philippines during the insurrection of 1898, and again was stationed on the islands in 1903 and 1908. In addition to his field service, he was in the commissary department in the Philippines, and at Fort Monroe, Va., and was assistant superintendent of the Army Transport Service. Having been graduated from the Army War College in 1916, General Wahl commanded the Eighth Infantry of the Fourth division when the United States entered the World War,

but in February, 1918, he was stationed in Washington for a short time at the head of the operations division of the general staff. By Apr. 12, 1918, however, he was commissioned brigadier general, returned to the line, and commanded the Fourteenth Infantry Brigade until Oct. 31, 1919. Returning to Washington, he was graduated from the General Staff School in 1921, and detailed to the Adjutant General's Department becoming, May 16, 1924, Assistant to the Adjutant General and July 2, 1927, was made Adjutant General of the Army. General Wahl was awarded the distinguished service medal for his work during the World War.

WALES. A historical division of the United Kingdom, consisting of 12 counties, on the west coast of Great Britain, between the Irish Sea on the north and the Bristol Channel on the south. Area, 7466 square miles; population, according to the census of 1921, 2,205,680. See **GREAT BRITAIN.**

WALKER, THOMAS BARLOW. American lumberman, art collector, and philanthropist, died at Minneapolis, Minn., July 28. He was born at Xenia, Ohio, Feb. 1, 1840. While supporting himself and his family by selling grindstones to farmers, he studied at Baldwin University (now Baldwin-Wallace College), at Berea, Ohio. At the age of nineteen, he began his long and very successful career in the lumber business by buying a piece of timber land at Paris, Ill., and contracting to supply the Terre Haute & St. Louis R. R. with ties and other lumber. The business was growing when the railroad failed, and Walker taught school until he went to the Northwest three years later as a member of a crew sent out by the St. Paul & Pacific R. R., now the Great Northern, to examine the land grants of the road. The knowledge he gained then proved advantageous when he organized the Red River Lumber Company in 1882, and he became eventually the largest timber-land operator in the Northwest and one of the greatest in America, with holdings in Minnesota and California. They brought him a fortune estimated at \$100,000,000 several years before he died. Mr. Walker was one of the pioneer builders of the City of Minneapolis, in which he lived for sixty years, and was probably its greatest benefactor. He gave the city its public library and the Walker Art Galleries. The latter contain specimens of the work of some of the world's most famous artists, ancient and modern, valued at more than \$5,000,000. He also was mainly instrumental in the building up of the Minneapolis Academy of Science and its museum of science and art. Baldwin College conferred on Mr. Walker the honorary degree of LL.D. He was a leading advocate of the policy of conserving the forests for perpetual use. He was a member of the International Committee of the Young Men's Christian Association, the American Economic Association, the American Forestry Association and other societies.

WANAMAKER, (LEWIS) RODMAN. American merchant, died at Atlantic City, N. J., March 9. He was born at Philadelphia, Feb. 13, 1863, the son of the late John Wanamaker, merchant and at one time postmaster-general of the United States. Rodman Wanamaker (who discarded his first given name, Lewis, early in life) was graduated from Princeton University in 1886, and from that time was associated in business with his father in the management of the retail establishments in Philadelphia and New York. He was

resident manager in Paris for ten years. He was also a director and official of many financial institutions. He became head of the Wanamaker interests on the death of his father in 1922. For several years he acted as consul general at Philadelphia for Paraguay and other South American countries. Mr. Wanamaker financed three expeditions to the West to study Indian life, and presented their collections to the Federal Government. He also presented an art collection to Princeton University. During the World War, Mr. Wanamaker served as chairman of the mayor's committee in New York to welcome homecoming troops, and he was also chairman of the mayor's committee on public welfare and of the committee on the reception of distinguished guests. He was a leader in numerous civic and philanthropic movements. He presented to New York the perpetually burning light and altar of liberty, in Madison Square, as a memorial to the American dead in the World War. In his later years, he devoted much time and money to the advancement of aviation. He received decorations from the governments of Great Britain, France, Italy, Belgium, Serbia, and Venezuela.

WAR, OUTLAWRY OF, ETC. See **ARBITRATION, INTERNATIONAL; PEACE AND PEACE MOVEMENTS.**

WAR CLAIMS. See **ARBITRATION, INTERNATIONAL.**

WAR DEBTS. See **PUBLIC FINANCE.**

WAR MEMORIAL. See **ARCHITECTURE.**

WARSHIPS. See **NAVAL PROGRESS.**

WARWICK, EARL OF. (LEOPOLD GUY FRANCIS MAYNARD GREVILLE). English soldier, died at Hoe, England, January 31. He was born Sept. 10, 1882, and was at Eton when the Boer War began. He was then known by the "courtesy title," Lord Brooke. He could not get parental consent to join the colors, so he sold his gun and his fur coats for funds to get to South Africa. There he was attached to the staff of Sir John French as a galloper. Having received a commission in the First Life Guards, he saw active service in the war, winning the Queen's Medal with four clasps. Later he served as aide-de-camp to Lord Milner. During the Russo-Japanese War, 1904-05, he followed the operations of the Russian Army as a correspondent for Reuters, and later wrote a book on his experiences. In 1908 he was appointed aide-de-camp to Sir John French, inspector general of the British Army, and in 1913 was chosen to command the Second Canadian Cavalry Brigade. When French became chief of the Imperial General Staff, he made Lord Brooke his secretary. The latter went to the front in 1914 as aide-de-camp to French, and later commanded the Fourth and Twelfth Canadian Infantry Brigades, with the rank of brigadier general. He was wounded in 1915, was mentioned in dispatches, and was made a Companion of the Order of St. Michael and St. George. He received various foreign orders also. Lord Brooke served also as liaison officer with the American Army. In 1924 he succeeded his father as Earl of Warwick, being the sixth holder of the title, of the present creation.

WASHINGTON, WILLIAM HENRY. American clergyman, bishop of the United Brethren Church, died at Dayton, Ohio, May 18. He was born at Greystone, Pa., Sept. 9, 1862. He was educated at Lebanon Valley College, 1891, and was pastor of a church at Harrisburg, Pa., 1890-94. In that year he was ordained in the ministry of the United Brethren Church and became pastor of

a congregation at Chambersburg, Pa., where he remained until 1902. From 1902 to 1917 he was superintendent of the Pennsylvania Conference of the Church, and then became bishop of the Pacific District, with his seat at Portland, Oreg. He lectured on social, economic, educational, and religious topics, and wrote *City Evangelization* (1906). Bishop Washington was a vice president of the Federal Council of Churches of Christ in America.

WASHINGTON. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 1,356,621. The estimated population on July 1, 1928, was 1,587,000. The capital is Olympia.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Wheat	1928	2,271,000	48,644,000	\$48,620,000
	1927	2,261,000	58,436,000	62,971,000
Hay	1928	937,000	2,186,000 ^a	28,434,000
	1927	962,000	2,369,000	30,425,000
Apples	1928	.....	33,500,000	30,150,000
	1927	.....	25,343,000	32,946,000
Potatoes	1928	67,000	9,045,000	4,522,000
	1927	79,000	13,430,000	8,058,000
Oats	1928	201,000	9,447,000	5,196,000
	1927	183,000	9,150,000	5,124,000
Corn	1928	46,000	1,794,000	1,776,000
	1927	43,000	1,591,000	1,432,000
Barley	1928	55,000	1,952,000	1,866,000
	1927	58,000	2,436,000	1,876,000

^a tons.

MINERAL PRODUCTION. The production of coal, the chief component of the mineral total of the State, was steady in 1927. There were mined 2,635,052 net tons, as against 2,586,568 in 1926; in value, \$9,222,000 for 1927 and for 1926, \$9,350,000. The by-product coke production of 1927 was 41,000 short tons, and that of 1926, 42,584 tons, valued at \$303,624. Beehive-oven coke totals were not available for 1927; for 1926 they were: quantity, 24,702 short tons; value, \$214,429. To Washington may be ascribed much the greater part of the cement shipments of 3,605,103 barrels in 1927 and 3,113,083 barrels in 1926 listed as from that State and Oregon; these had a value, for 1927, of \$7,736,933 and for 1926 of \$6,742,667. The clay products of the State of Washington attained \$2,583,333 for 1926 and \$2,619,250 for 1925. There occurred a sharp rise in the production of gold, the quantity for 1927 being 19,514 fine ounces, as against 9341 fine ounces in 1926. Three-fourths of the total for 1927 came from Ferry County. Production of other metals was: silver, 1927, 155,850 fine ounces, 1926, 171,649; copper, 1927, 1,685,843 pounds, 1926, 1,351,890; lead, 1927, 955,003 pounds, 1926, 4,546,228; zinc, 1927, 1,279,710 pounds, 1926, 1,044,354. The total value of the year's product of these five metals was \$854,659 for 1927 and for 1926, \$931,491. The State was again the chief source of magnesite, furnishing 77,740 short tons in 1927 as against 79,560 in 1926; in value, \$583,050 in 1927 and \$596,700 in 1926. The total value of the State's mineral products was \$21,256,952 for 1926; for 1925, \$22,382,132.

The 1928 production of gold was \$334,000; that of silver, 94,000 ounces; copper, 1,121,000 pounds, in value \$163,000; lead 1,180,000 pounds, \$72,000. Zinc mills were almost entirely closed down and production was but 26,000 pounds.

FINANCE. State expenditures in the year ended Sept. 30, 1927, as reported by the U. S. Depart-

ment of Commerce, were: for maintenance and operation of governmental departments, \$22,921,765 (of which \$9,683,539 was aid to local education); for interest on debt, \$716,615, for permanent improvements, \$11,116,449; total, \$34,754,829 (of which \$9,556,931 was for highways, \$2,585,305 being for maintenance and \$6,971,626 for construction). Revenue was \$35,622,467. Of this, property and special taxes formed 48.3 per cent; departmental earnings and charges for officials' services, 6.6 per cent; sales of licenses and taxation of gasoline, 34.5 per cent. Property valuation was \$1,216,089,557; State taxation thereon, \$13,792,277. Net State funded debt on Sept. 30, 1927, was \$12,911,977.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 5556.92. There were built in 1928, 19.37 miles of additional first track.

EDUCATION. The movement toward the consolidation of schools into larger units was marked in 1928, according to State Superintendent J. C. Preston, in the *Journal* of the National Education Association, 61 consolidations being effected by popular vote in the course of the year; of these, 14 joined districts previously separated by county borders. Twenty-nine counties qualified as to the State standard set up for their public schools. The school population as estimated for the academic year 1927-28 was 425,764. There were enrolled in the public schools in that year 339,001 pupils, not to count an evening school enrollment of 13,001. Of the day pupils, 257,990 were in the elementary grades, 2774 in kindergartens and 78,237 in high schools. Expenditures for public-school education in the year were: current, \$26,237,518; interest on debt, \$1,557,327; outlay, \$4,471,005. Salaries of teachers averaged \$1908 for men and \$1430 for women.

CHARITIES AND CORRECTIONS. The State conducts some 12 independently managed institutions for the care or custody of individuals. These are the State School for the Deaf, Vancouver; State School for the Blind, Vancouver; State Training School, Chehalis; State School for Girls, Grand Mound; State Soldiers' Home, Orting; Washington Veterans' Home, Retsil; Western State Hospital, Steilacoom; Eastern State Hospital, Medical Lake; Northern State Hospital, Sedro Woolley; State Penitentiary, Walla Walla; State Custodial School, Medical Lake; State Reformatory, Monroe.

POLITICAL AND OTHER EVENTS. The new administration building of the State capital group at Olympia was completed and was opened for regular use March 28. Its cost was stated to be \$7,350,000. Governor Hartley, in an address at the opening, characterized it as "a monument to extravagance in design and waste and profligacy in furnishings." The alien land law of the State was sustained April 23 by the U. S. Supreme Court in a decision in harmony with the findings of the State courts, against the efforts of a Japanese to hold land on the White River near Seattle, in the name of a corporation. The preliminary bore for the construction of the tunnel of the Great Northern Railway system through the Cascade Mountains was holed through May 1, by a blast set off electrically by President Coolidge at the White House. The tunnel, when complete, was to cost \$16,000,000, and to be 7.79 miles in length, the longest in the Western Hemisphere.

Teachers in the schools of Seattle formed a trade union affiliated with the American Federa-

tion of Labor, a course to which the school board of the city was opposed. The board accordingly imposed on teachers as a qualification for employment a declaration that the declarant was not a member of the American Federation of Teachers or of any of its locals, and would not become a member while under employment contract. The teachers' organization carrying the matter to the State courts was finally, in July, refused an injunction by the Supreme Court of the State, confirming a lower court, which had laid down the principle that public-school teaching was of a public character, and under absolute control of the State. Construction of the Medico-Dental Building, an office building in Spokane, 15 stories in height and to cost about \$1,000,000, was begun in July. Tacoma, according to report of July 3, by an offer of electric power at the extraordinarily low rate of 1½ mills a kilowatt-hour from its municipal power plant, secured the location in the city of a \$2,000,000 chemical manufactory.

ELECTION. The vote of the State in the election of November 6 was mainly Republican. On the National ticket, Hoover and Curtis (Republican) received 335,844 votes; Smith and Robinson (Democratic), 156,772. Senator C. C. Dill, Democrat, however, was reelected to the United States Senate for the ensuing regular term, defeating Kenneth Mackintosh, Republican. The political complexion of the State's delegation to the House of Representatives remained the same; four Republican incumbents were reelected. Governor Roland H. Hartley, Republican, was reelected, defeating Scott Bullitt, Democrat. John A. Gallatly (Republican) was elected Lieutenant-Governor. Other officers elected, all Republican, were: J. Grant Hinkle, Secretary of State; Charles W. Hinton, State Treasurer; C. W. Clausen, Auditor; John H. Dunbar, Attorney-General; N. D. Showalter, Superintendent of Public Instruction.

OFFICERS. Governor, Roland H. Hartley; Lieutenant-Governor, W. Lon Johnson; Secretary of State, J. Grant Hinkle; Treasurer, W. G. Potts; Auditor, C. W. Clausen; Attorney-General, John H. Dunbar; Superintendent of Public Instruction, Josephine Corliss Preston.

JUDICIARY. Supreme Court; Chief Justice, Kenneth Mackintosh; Associate Justices, Emmett N. Parker, Mark A. Fullerton, John R. Mitchell, O. R. Holcomb, Warren W. Tolman, John F. Main, William D. Askren, Walter French.

WASHINGTON, UNIVERSITY OF. A State institution of higher education at Seattle, Wash., founded in 1861. The enrollment for the autumn term of 1928 was 7282, of whom approximately 58 per cent were men. The summer-school enrollment totaled 3057 in the two terms, including 2019 women and 1038 men. The faculty, on November 1, consisted of 350 members. The courses offered at the University in 1928-29 were: Business administration, education, engineering, fine arts, fisheries, forestry, journalism, law, liberal arts, library science, mines, pharmacy, science, and graduate work. The income from all sources for the scholastic year 1927-28 was \$2,917,462. The library contained 249,208 volumes. President, M. Lyle Spencer, Ph.D.

WASHINGTON AND JEFFERSON COLLEGE. A non-sectarian institution for the higher education of men at Washington, Pa., founded in 1802. The enrollment for 1928-29 totaled 499,

of whom 12 were graduate students; 101, seniors; 92, juniors; 127, sophomores; and 167, freshmen. The 1928 summer session had a registration of 242. There were 40 members on the faculty. The productive funds of the college amounted to \$1,441,128, and the income from all sources during the year was approximately \$207,042. The library contained 40,763 volumes. President, S. S. Baker, M.S., LL.D.

WASHINGTON AND LEE UNIVERSITY.

A non-sectarian institution for the higher education of men at Lexington, Virginia, founded in 1749. The enrollment for the autumn of 1928 was 910. There were 56 members on the faculty. The productive funds of the University amounted to \$1,390,047, and the income for the year was \$339,396. The library contained 65,000 volumes. President, Henry Louis Smith, Ph.D.

WASHINGTON BICENTENNIAL. See CELEBRATIONS.

WASHINGTON UNIVERSITY. A non-sectarian institution of higher learning for men and women at St. Louis, Missouri, founded in 1853. The enrollment on November 1, was 6669, distributed as follows: Graduate students, 226; college of liberal arts, 1514; engineering, 411; architecture, 111; business and public administration, 183; law, 182; medicine, 329; dentistry, 195; fine arts, 354; extension division, 2902; nursing, 262. The faculty for 1928-29 numbered 541, including 89 professors, 45 associate professors and 82 assistant professors. Among the new appointments were those of Dr. Albert Hayes Sharpe, professor of physical education and director of the University health service; Dr. Harvey James Howard, professor of ophthalmology; Dr. Lee Wallace Dean, professor of oto-laryngology; Dr. Edmund Vincent Cowdry, professor of cytology; and Dr. Jacques Jacob Bronfenbrenner, professor of bacteriology and immunology. The value of the buildings, grounds, and equipment of the institution was estimated at \$8,839,101; the endowment was \$13,802,548; and the income for the year was \$2,788,491. The library contained 285,654 volumes and 78,386 pamphlets. Gifts received in 1928 amounted to \$686,444, in addition to which, \$600,000 was received for the George Warren Brown Department of Social Work in the school of business and public administration. A woman's building and a school of dentistry building were completed during the year. Acting Chancellor, George R. Troop, Ph.D.

WATER POWER. The year 1928 witnessed a perceptible slowing down in the number of water-power developments projected in the United States. This was due to several factors, chief among which was that most of the more favorably located sites had been developed; there was a realization that the increased operating efficiencies of steam plants had enabled them to compete successfully with all save a few low-cost hydro plants; and certain political aspects had held up two or three of the remaining large projects. Of the latter, the bill affecting the Boulder Dam on the Colorado River was passed by Congress and signed by the President during the last few days of the year. This would involve a potential capacity of a million horse power.

Another, the proposed St. Lawrence development, still was awaiting an equitable agreement between the Federal Government, the State of New York, and Canada. Additional diversion of water at Niagara Falls seemed assured in that negotiations had been consummated between the

Canadian and the United States governments which provide for the construction of remedial works that will retard recession of the Falls and preserve their beauty, at the same time making available an additional 20,000 cu. ft. per sec. on each side for power purposes. This represents over a million additional horse power. The programme will have to be ratified by Congress and by the Canadian Parliament before being put into effect.

In spite of the fewer developments projected, energy from water power had assumed a larger rôle in meeting the demands of the United States. Of the total central-station power generated during the year, hydro plants supplied about 43 per cent, or 36 billion kilowatt-hours, compared with 14 billion kilowatt-hours in 1920. This was due to several large plants having gone into operation, to more efficient use of existing water-power capacity made possible by system interconnection with steam stations, and to higher efficiencies attained through improved designs of the hydro plants themselves and their equipment.

In 1908 there was about 10½ million horse power of hydro capacity installed in central stations in the United States, exclusive of a large number of scattered and smaller developments supplying mills and factories direct.

Among the more important plants that went into service during the year, the Conowingo development on the Susquehanna River was outstanding. At the end of the year, this contained seven 54,000-horse-power units operating under a 90-foot head. In physical dimensions, they were the largest yet constructed in the United States, although in capacity they did not equal the 70,000-horse-power units installed several years previously at Niagara Falls. The Conowingo development is a part of the system of the Philadelphia Electric Company which is tied in with that of the Public Service Electric Company of New Jersey and the Pennsylvania Power and Light Co. This large interconnected system of hydro and steam plants serves eastern Pennsylvania and the whole of the State of New Jersey. The electrification of the Pennsylvania Railroad from New York to Wilmington announced during the year was to be supplied by this system. See DYNAMO-ELECTRIC MACHINERY.

For high-head plants, another record was established in Big Creek 2A of the Southern California Edison Company, where two 58,000-horse-power units have been put in, operating under a head of 2418 feet.

During the year, the Rocky River Development of the Connecticut Light & Power Company went into service. This was the first in the United States to operate on pumped water which is forced up into a large reservoir by electric-driven pumps operated during off peak periods by power generated in a steam station of the company. The Rocky River plant contains one 33,000-horse-power vertical shaft water wheel operating under a 240-foot head. The water is pumped up to the reservoir by two 8100-horse-power pumps.

Another plant that went into operation during the year was the Norwood development of the Carolina Power & Light Co., which contains three units totaling 88,000 horse-power under a 70-foot head. Incidentally these units are of the outdoor type. A record low-head plant which went into service during the early part of 1928 was that

on the Ohio River at Louisville, Ky., which contains eight 13,500-horse-power units, operating on a head ranging from 37 to 10 feet.

Work was progressing on the "Fifteen Mile Falls" development of the New England Power Association on the upper waters of the Connecticut River at Barnet, Vt., and at Monroe, N. H., where a combined capacity of 300,000 horse power was to be made, available in the ultimate development. The first section was to be completed in the fall of 1930.

The total capacity of water wheels installed in water-power plants of 100 horse power or more in the United States on Dec. 31, 1928, was 13,571,530 horse power, an increase of 1,275,530 horse power, or 10.4 per cent, during 1928. The increase in 1927 was only 575,000 horse power. The gain in 1928 was therefore more than twice that during 1927. The accompanying table shows the total capacity of water-power plants in the United States at different dates and the increase between dates:

Date	Horse power	Increase Horse power
1921 (November)	7,926,958	
1924 (March)	9,086,958	1,160,000 ^a
1925 (March)	10,037,655	950,697
1925 (December 31)	11,176,596	1,138,941 ^b
1926 (December 31)	11,730,983	554,387
1927 (December 31)	12,296,000	575,017
1928 (December 31)	13,571,530	1,275,530

^a About 2.3 years.

^b About 0.8 year.

In Canada water power continued to be active because it still had a decided advantage over fuel which is more expensive. One of the projects under construction was to have four 75,600-horse-power units. This is the Chute-a-Caron development of the Alcoa Power Co. on the Saguenay River. In Europe, France was giving much attention to development of her water power in the South in a comprehensive plan to meet industrial demands for electricity. Under this plan, water power will supply about half of France's electrical demands. Italy is another country that was active in water-power development owing to the absence of native coal. Certain of these projects were being undertaken in conjunction with the development of irrigation projects.

A most unique hydro development involving over 100,000 ultimate kilowatt capacity was being built by Japan in the mountains of Northern Korea. The western slope of this range is gradual and contains rivers, whereas the eastern slope is very steep and has no streams. Accordingly, a large reservoir was being constructed on the Western slope in which water from the streams will be impounded. This water will be conducted through a 16-mile tunnel to the eastern side of the range and a head of 3326 feet utilized. Japan was actively carrying on other hydro developments in Formosa.

See DYNAMO-ELECTRIC MACHINERY.

WATER PURIFICATION. Water-borne typhoid epidemics, rare for some years past, occurred at Olean, N. Y., and St. Leonard, N. B. (Canada), during the year. The Olean outbreak, with 227 cases and 20 deaths up to December 15, was due to a break in a water main beneath a river, which admitted polluted water to a supply from wells, used in case of emergency. The temporary supply was chlorinated, but the requisite daily tests to show whether sufficient

chlorine was being applied were not made, and enough chlorine to cope with the pollution was not used. Had the tests been made, they would have shown not only that more chlorine was needed for disinfection but also that the supply was being polluted, thus warning of danger. At St. Leonard, 200 cases of typhoid and 7 deaths were attributed to cases of the disease in a family living on the gathering grounds from which the water supply of the village is taken. Infection of this family was believed to have been caused by the temporary use of polluted water from the St. John River. Damages of \$3000 against the City of Albany, N. Y., were awarded in 1928 for a case of typhoid in 1924 alleged to have been caused by polluted water gaining access to a steel pipe laid in the bed of the Erie Canal and carrying filtered water to the city. This main was being replaced. The Appellate Division of the Supreme Court of New York upheld a jury award in the trial court. Eighty other damage suits were pending when the decision was rendered.

Among books in this field published during the year were: Ellms, *Water Purification*, revised edition (New York), and Gross, *Handbuch der Wasserversorgung* (Munich and Berlin). See WATER SUPPLY; MUNICIPAL OWNERSHIP; and TUNNELS; TYPHOID FEVER.

WATER SUPPLY AND WATERWORKS.

While no great new enterprises were placed under construction during the year, several important works were nearing completion, several new projects were considered, and contracts were let for a second great distributing tunnel in New York. Perhaps the most interesting new development in aqueduct design was the use of arc-welded steel pipe in two new supply systems. Indeed the use of steel pipe for main distributing conduits was itself somewhat of a novelty having been introduced in the Brooklyn extensions from shafts Nos. 23 and 24 of the Catskill supply of New York City to outlying districts in Flatbush and for the connections to the No. 2, 42-inch cast-iron siphon across the Narrows, a few years previously.

It would appear that the water supply problem was still to be met by securing additional supplies through works of constantly increasing magnitude rather than by any very widespread and determined efforts to reduce waste. Chicago, for example, with a consumption of over 250 gallons per capita daily, at least half of which was unnecessary and avoidable waste, was unable to put through legislation to secure thorough metering of the supply and was going forward with a new intake crib and tunnel. In New York, although the consumption was probably not unreasonable for a great city (about 125 gallons per capita per day), careful estimates showed that even with the great Catskill supply there would be an urgent need for additional water by 1935, and plans for a new supply and new aqueduct were rapidly crystallizing. Smaller cities were in general following the same course. St. Louis and Kansas City, for example, had extended their supplies and the latter had built a most interesting filter plant. The water supply problem, therefore, promised to be an important American engineering problem for many years to come, although in Europe it had reached a more or less stable position with minor improvements and consolidations the usual type of work.

NEW YORK CITY. As already noted it was expected that there would develop an urgent need for more water than the Croton and Catskill systems can supply, by 1935. Plans for an additional supply from tributaries of the Delaware River, in New York State, and from Rondout Creek were recommended in 1927. The New York City Board of Estimate and Apportionment had approved these plans, and in 1928 surveys and borings were under way, but no steps had been taken toward acquiring property, etc. pending an opinion from Judge Charles E. Hughes, who had been retained by the City, on the legal aspects of the diversion of water from the Delaware River, because it is an interstate stream.

The plan as announced contemplated building five reservoirs on tributaries of the Delaware directly west of the Catskill area and estimated to be capable of supplying 600 m. g. d. (million gallons daily). A reservoir on Rondout Creek, south of Ashokan Dam, was figured as a source of 100 m. g. d. and a new aqueduct was planned running eastward from the Delaware area to Rondout and crossing under the Hudson to the high-level West Branch reservoir in the upper Croton watershed. This would make available an additional supply from the upper Croton, which was passing to the Croton system, a low-level or low-pressure supply, at the higher Catskill level. The combined supplies would then be brought southward by a new aqueduct to Kensico and Hill View reservoirs. This plan in cost and magnitude was believed to exceed the great Catskill supply and aqueduct of 1917. See *Eng. News-Record*, Aug. 11, 1927.

Contracts also were let for duplicating the deep distribution tunnel built under the city as part of the Catskill system. Tunnel No. 1 passes southward from Hill View Reservoir down Manhattan Island and under the East River to Fort Greene Park, Brooklyn. The new tunnel, No. 2, will turn southeast from Hill View under the Bronx, crossing to Queens under Randall's Island and continuing to meet No. 1 at Fort Greene Park. As in the case of tunnel No. 1 this new distributing main will be 250 to 700 feet below ground surface, deep in solid rock. From its various shafts, connections were to be made to the regular cast-iron distributing mains in the city streets. The tunnel was to be 17 feet in diameter and cost \$42,693,000 and was to furnish a supply to the rapidly growing sections through which it passes.

LOS ANGELES, CALIF. Almost a million dollars had been expended in making surveys and plans for what promised to be the longest and largest aqueduct in the world, which was to connect the city with the Colorado River. To be designed for 970 m. g. d. and to be almost 300 miles long, it was expected that this huge work would solve Los Angeles' water problem for 50 years to come. Final action on the project was expected in the near future.

SAN FRANCISCO. Construction of the long-awaited Hetch Hetchy project was still under way in 1928, and it was expected that the supply would reach the city by 1932. The upper section including the O'Shaughnessy Dam in Yosemite Park and the aqueduct to the Moccasin power plant had been finished for some time and was bringing some \$2,000,000 a year in power sales. The San Francisco Bay section was also completed, while the Coast Range tunnels were prac-

tically finished at the end of the year and bonds issued for the last link—the 45 miles of steel pipe across the San Joaquin Valley.

MOKELUMNE PROJECT. This work, which was to supply water from the Mokelumne River through a 95-mile conduit to cities on the east side of San Francisco Bay, was still under construction, having been delayed by legal difficulties connected with real estate for the upper-tunnel section and reservoir construction. The work had attracted much attention as it consisted in large part of a 65-inch steel pipe line which had been built by electric welding. Although this was the first line so constructed, it was followed in 1928 by a six-mile supply line of 48- to 54-inch size for Springfield, Mass. In both cases the pipe was made in 30-foot lengths with longitudinal welded joints only. Transverse joints were made by riveting after experiments with welding had failed to give satisfactory results.

BOSTON. Work was being pushed on the extension of the Metropolitan supply westward into the Swift and Ware rivers to meet the urgent requirements for additional supply. Indeed temporary works had been installed pending the completion of the first 14 miles of tunnel, under construction in 1928 which would carry flood flows of the Ware into the existing Wachusett Reservoir on the Nashua watershed of the Boston Metropolitan Water System. The ultimate plan involved an extension of the tunnel to a total length of 25 miles with a reservoir on the Swift River in which the waters of both the Ware and the Swift were to be collected. The cost of the project was estimated at \$65,000,000.

WANAUKE SUPPLY. The eight north Jersey cities, which had combined in the North Jersey District Water Supply Commission, appeared still to be deadlocked on the relative advantages and disadvantages of the various schemes proposed for aerating the supply from the completed Wanaque Dam and delivering it by aqueduct. It would appear that the high-level cities were afraid the loss of head in aeration might cause a lack of pressure in the supply system, while the lower-level cities naturally had no such doubts. Fortunately, a compromise was effected and the construction of this great and much-needed supply was to be continued.

CHICAGO. The steel base for the new intake crib was successfully launched during the summer. It is 90 feet in bottom diameter and 45 feet high. In the new plans for this supply to the northern part of the city, a new 3-mile tunnel to connect with the intake was being driven deep in the rock below Lake Michigan as had been done in the more recent Chicago works. It was planned to extend this tunnel some 12 miles in length under the city and thus use it as a main distributor from which the supply may be pumped.

Many complaints continued to be heard, during the year, of the bad quality of the Chicago water, which is heavily treated with chlorine for sterilization against its heavy pollution. A phenol taste was said to be particularly noticeable at times and the combination of taste of polluted water and chlorine was said to be far from pleasant. Chicago, however, apparently was determined not to filter her supply but was taking steps to prevent, if possible, the pollution of her source, Lake Michigan, by other cities on its shores. Chicago's wastes pass through the Drainage Canal to the upper Mississippi area and

this diversion of water also was still a pressing economic and legal question yet awaiting final settlement.

MONTREAL. In Canada, Montreal completed the purchase of the property of the Montreal Water and Power Company, which supplied a part of the city and considerable outlying territory. Montreal had built a new low-level pumping station with a capacity of 180,000,000 Imperial, or 216,000,000 U. S. gallons, in six units of equal size. This station was to deliver water to the old, and also to a new filtration plant, with nominal capacities of 50,000,000 and 100,000,000 Imperial, or 60,000,000 and 120,000,000 U. S., gallons.

See DAMS; TUNNELS; WATER PURIFICATION.

WATER WHEELS. See WATER POWER.

WAVES. See PHYSICS.

WEATHER. See METEOROLOGY.

WEEVIL. See ENTOMOLOGY, ECONOMIC.

WEISS, vâ'is, ANDRÉ. French vice president of the Court of International Justice at the Hague, died September 5. He was born of Jewish parents at Mülhausen, Alsace-Lorraine, Sept. 30, 1858, and having studied law at Paris, he was admitted to the bar in 1880, practicing at the Court of Paris. He lectured on the law faculty at Dijon, 1881-91, and at the University of Paris, 1891-96, where he was professor of civil law, 1896-1908, becoming professor of public and private international law in 1908. He represented the French Government before the Hague Court in 1909 and 1911. Being sent as technical councillor in 1919, he became a member of the Court of Permanent Arbitration at the Hague. He also acted as legal adviser for the Ministry of Foreign Affairs, and was elected vice president of the Court of International Justice. He was president of the Institute of International Law and the International Academy of Comparative Law at Geneva. M. Weiss wrote a number of highly esteemed articles and books, including: *Étude sur les conditions de l'extradition* (1880); *Traité élémentaire de droit international privé* (1885); *Traité théorique et pratique de droit international privé* (1892-98, second edition, 1907-13); *Le droit civil et la législation comparée* (1900); *Manuel de droit international privé* (1905); and *Le code civil et le conflit des lois* (1906).

WELDING, ELECTRIC. See BRIDGES; ELECTRICAL INDUSTRIES.

WELFARE WORK. A leading authority in the United States on old-age pensions, Abraham Epstein, in an article in *Current History* for June, analyzes the great expenditure annually on social work as a result of private effort. He points out that probably from \$500,000,000 to \$650,000,000 is being spent each year by private social workers on current expenses exclusive of the capital outlay. In New York City alone 1200 or more private welfare agencies were spending annually \$75,000,000 or a per capita expenditure of \$12.60. In 1924, social-welfare agencies in 19 cities, all but one of which had populations under 1,000,000, spent \$112,780,524. All this is being done not to do battle with poverty or in the interests of social justice but in the name of a social-work technic. "His (the social worker's) prescriptions are no longer compounds of social panaceas and far-visioned dreams, but of all the new discoveries of psychology, psychiatry, and the science of case work. The questions of a living wage, abolition of the slums, woman and child labor, the lack of economic opportunity, the insecurity of life, and so forth no longer attract

him. His new faith proclaims the inequality of human beings and he believes that 'to get socially helpful results, we have to do different things for different people.'"

Mr. Epstein attacks the prevailing lethargy of social workers in their refusal to lead the fight for social betterment and the eradication of those insecurities that have become part and parcel of our modern industrial life, to wit, illness, unemployment, invalidity and old age. The author advances these reasons for the "soullessness of present-day social work": 1. Executive jobs are paying good salaries and are attracting persons not fired by enthusiasms but who can master the elaborate technic necessary. 2. Centralization through community chests makes the chief problem that of money raising. 3. Social work is being supported by the contributions of the wealthy and the social worker cannot very well forget that. 4. There is a high rate of turnover among the staff social workers. 5. Because of the intricacy of the organizations, the executive cannot be in personal contact with the dependent persons it is his business to serve.

FRENCH SOCIAL INSURANCE LAW. Mr. Epstein is one of a few persons who appreciate that modern industrial life demands more than the palliative measures that private social work is willing to countenance. There exist in England, Germany, Russia, and France elaborate social insurance codes whose purpose is to cope with the prevailing problems of illness, unemployment, invalidity, and old age which have, in effect, been brought in the train of the mechanization of society. France joined the ranks of other enlightened European countries when, on April 5, a decree was passed announcing the inauguration of a social insurance system which has sickness, unemployment, premature invalidity, old age, maternity, and death features. Insurance is compulsory for all employed persons of both sexes whose incomes do not exceed 18,000 francs annually. The insurance funds are to be maintained by contributions from the employer, the worker, and the State. Insured women are to receive medical attention during pregnancy and for six months following. The law is to go into effect within 10 months after the issuance of the regulations necessary for its administration and these regulations must be issued within the year.

CONFERENCES. The fifty-fourth annual session of the *National Conference of Social Work* was held May 2-9 at Memphis. It is impossible to do more than record the extraordinary activity that characterizes this gathering which has, in effect, become a meeting of technicians every whit as incomprehensible to the layman as the conferences of biologists or mechanical engineers. The following were the division meetings with the subjects of leading interest indicated: "Child Care"—Undifferentiated case work. "Health"—Changing status of the causes of sickness and death. "The Family"—A symposium on financial dependency and relief giving. "Industrial and Economic Problems"—Industrial problems of the South. Workmen's compensation and the family. "Neighborhood and Community Life." "Mental Hygiene." "Organization for Social Forces"—Organizing the community for legislative reform. Fact-finding and research as a basis of programme making in social work. "Public Officials and Administration." "The Immigrant." "Professional Standards and Education." "Educational Publicity." The programmes listed 325 speakers and

discussion leaders with one expert making five appearances and one making four. There were 2500 delegates present. Porter R. Lee of New York was chosen the president of the Conference for 1929 and San Francisco was named as the meeting place.

The National Conference of Jewish Social Service held in Cincinnati May 9-13 had as its general topic "The Future of Jewish Social Work."

Subjects were quite as technical except that this group indicated an increasing concern with the purely Jewish phases of its purpose. Speakers therefore stressed the need for scientific studies in Jewish demography, the extension of Jewish education and the growth of the Jewish centre. However, Jewish social workers appeared willing to forget all about social and economic conditions that were producing dependency every bit as much as were their non-Jewish confrères. Sidney Hillman, president of the Amalgamated Clothing Workers of America, pointed this out when he declared that trade-unionism was out of sympathy with the aims of social work.

The first *International Social Welfare Fortnight* was held at Paris July 2-13. From 5000 to 6000 delegates assembled from 50 countries. The following four congresses were held: Housing and Town Planning; Public and Private Relief; Child Welfare; Social Work. The housing congress discussed the subjects of the housing of the poor, rural housing, town and rural planning, house-building costs, etc. The congress on public and private relief discussed social insurance and the coördination of the work of preventive and relief agencies. At the child-welfare congress were taken up the following subjects: maternity homes, breast feeding, children's courts, open-air institutions for children, and social work for dependent children. The social work congress, the first ever held, was organized by Dr. René Sand, secretary general of the League of Red Cross Societies. The meetings were held in five sections: general organization of social work, training for social work, methods of social case work, social work and industry, and social work and public health.

The stupendous organization machinery of this last congress may be indicated by the following: forty national reports on the status of the subjects discussed at the five sections above were published in English, French, and German, and reports in the same languages of the papers to be discussed were distributed a month before the conference. Bibliographies were published. Exhibits were organized. Resolutions were passed for the continuance of the organization.

The Association of Community Chests and Councils held their annual meeting February 20 at Washington. Among the speakers were Secretary Hoover, Dr. W. H. Faunce of Brown University, and Louis Marshall, all of whom praised the community chests for collecting large sums of money for charitable purposes. Mr. Hoover, for example, declared that no civilization could endure without spiritual development through public service.

CHARITABLE TRUSTS. It has been observed by social statisticians that philanthropic foundations have a tendency to recede from direct contact with the problems of dependency and to concern themselves with the academic or institutional respects of the subject. That is to say large funds will not be used for the amelioration of dependency but for questionable pieces of re-

search or for institutional building. An example of this tendency is to be found in the re-direction given to the purpose of the Wieboldt Foundation, a Chicago trust fund of \$5,000,000 for the "dispensing of charity." Originally 200 social agencies were the beneficiaries of the fund. However, the 1927 report lists only 43 and of the total expenditure of \$265,000, \$212,000 was turned over to the University of Chicago and the Y. M. C. A. for their building funds. Two pieces of research were conducted under the Foundation's auspices during the year, viz., a study of domestic discord and the moving-picture experiences of 10,000 children.

TRADE UNIONS. A study made by the U. S. Bureau of Labor Statistics revealed that trade-unionism was one of the most powerful agents existent in the United States in the war on dependency. Among the 75 national and international unions examined, it was found that 61 pay death benefits, 13 pay benefits for disability, 13 have benefits in the case of sickness, 13 provide for superannuation, 19 have some form of life insurance, 8 unions take care of their tubercular, 7 maintain homes for the aged. Among the unions, a movement appears to have evidenced itself for the conversion of the death benefit into group insurance, usually of the \$1000 type. Death benefits vary from \$20 to \$1500 payable on the death of the member, \$200 to \$300 being the common maximums. Maximums depend upon the length of affiliation. Disability benefits, too, vary depending upon the length of membership and ranging from \$50 to \$800. In some cases, as in that of the granite cutters, such benefits are paid only when disability is due to an occupational disease. With the granite cutters, payment is made only in the case of blindness. A locomotive fireman or an engine man in good standing gets \$50 monthly if incapacitated. It is interesting to note the brotherhood's definition of a chronic ailment: "Bright's disease, uncompensated valvular disease of the heart, progressive pernicious anemia, permanent paralysis of either extremity, locomotor ataxia, total deafness in both ears, arthritis deformans, diabetes, cancer, or loss of both eyes, a hand, or foot." Sick benefits vary from \$4 to \$10 weekly and the benefit period ranges from 7 to 16 weeks. In some cases, a waiting period of a week is the rule.

The following various types of insurance were being carried by the unions surveyed: 8 carried group life insurance policies, the minimum being \$250 and the maximum \$3000; 6 carried life and total disability; 4 carried life; 5 carried accident insurance policies. During the last fiscal period of the unions studied, a total of ten and a half million dollars was paid out by the unions for the benefits enumerated, viz., death, disability, sickness, old age, etc. It is important to note, too, that during the whole period of operation the trade unions paid out for these benefits a total of \$102,311,174. The insurance payments were equally large. In the latest fiscal period, insured trade unionists to the number of 551,233 collected \$12,009,940 and during the whole period of operation the amount of insurance paid by trade unions has been \$229,780,672.

WELLAND CANAL. See CANALS.

WELLESLEY COLLEGE. A non-sectarian institution for the higher education of women at Wellesley, Mass., founded in 1875. The enrollment for the autumn term of 1928 was 1597, including: 41 resident candidates for the degree

of M.A., 17 for the certificate in hygiene and physical education, and 10 for the degree of M.S. in hygiene and physical education. The actual teaching staff numbered 164 and the officers of instruction and government 248. The trust funds amounted to \$8,995,406, and the income for the year was \$1,117,619 (including dormitories' net). Two new dormitories, Stone and Olive Davis, were opened in January, and ground was broken during the year for a new faculty apartment house. The library contained approximately 125,000 volumes. President, Ellen Fitz Pendleton, M.A., Litt.D., LL.D.

WELSH LANGUAGE AND LITERATURE. See PHILOLOGY, MODERN.

WESLEYAN METHODIST CONNECTION OF AMERICA. See METHODIST, WESLEYAN CONNECTION OF AMERICA.

WESLEYAN REFORM UNION. See METHODISTS, WESLEYAN.

WESLEYAN UNIVERSITY. An institution for the higher education of men at Middletown, Conn., founded in 1831. The 1928 autumn enrollment was 620, the number of students being restricted. The faculty numbered 71. The productive funds of the University amounted to \$4,627,486, and the income for the year was \$541,078. The Olin Library, costing \$750,000, the Shanklin Laboratory of Biology, and the Harriman Dormitory were dedicated during the year. Dr. William A. Heidel, Professor of Greek at the University for twenty-three years, who was appointed research associate of the American Council of Learned Societies in the autumn, was released from his teaching duties and appointed to a specially created fellowship in the Greek language and literature in order that he might be free to carry on his new work. President, James Lukens McConaughy, Ph.D.

WESTENHAVER, DAVID C. American jurist, died at Cleveland, Ohio, July 29. He was born in Berkeley County, West Virginia, Jan. 13, 1865, and was graduated from the law school of Georgetown University in 1886. He began the practice of law at Martinsburg, W. Va., in the same year and a few months later became prosecuting attorney of Berkeley County, serving one year. He removed to Cleveland in 1903 and practiced there until he was appointed by President Wilson judge of the U. S. District Court for the Northern District of Ohio, in 1917. He took an especial interest in patent litigation and was noted for his decisions in patent cases, filed in his court from all parts of the United States. He received the degree of LL.D. from Georgetown University in 1920. In the World War period, Judge Westenhaver drew public attention by his decision releasing thousands of alleged "draft dodgers" because of the statute of limitations, and in September, 1918, he became especially conspicuous as the judge who sentenced the late Eugene V. Debs to a Federal prison for ten years for a seditious speech which the Socialist leader made at Canton, Ohio.

WESTERN AUSTRALIA. A state of the Commonwealth of Australia, comprising that portion of the island continent which lies to the west of the Northern Territory and Southern Australia; the largest state in the Commonwealth, constituting almost one-third of the area of the continent. Area, estimated at 975,920 square miles; population, according to the census of 1921, 332,732; the full-blooded aborigines were estimated at 22,222 in 1925-26; estimated

population of the state on Mar. 31, 1927, 381,470. Capital, Perth, with an estimated population at the end of 1926, including suburbs, of 184,223. In 1926 the movement of population was: Births, 8301; deaths, 3350; marriages, 2844. In 1926 immigrants, 30,732; emigrants, 2912. In 1926, the number of government schools was 824, with 51,716 students enrolled; the number of private schools was 120, with 11,766 students.

The area under crops in 1927 was 3,324,523 acres. The area and production of the principal crops in 1926-27 was as follows: Wheat, 2,571,187 acres, 30,021,616 bushels; oats, 234,826 acres, 2,710,436 bushels; barley, 13,826 acres, 128,136 bushels; hay, 358,487 acres, 423,836 tons; potatoes, 5144 acres, 17,755 tons; orchards, 1294 acres, 291,951 gallons of wine. In 1927-28 the estimated areas sown to wheat, oats, and barley, respectively, were 3,222,369, 411,282, and 18,788 acres. The livestock numbered 166,463 horses, 827,303 cattle, 7,468,766 sheep, 69,798 pigs, 20,979 goats, 5021 camels, and 9442 mules and donkeys. The wool clip was 50,235,640 pounds and the exports, 53,787,555 pounds valued at £3,508,313. Coal and gold are the two leading minerals. In 1926, 474,819 tons of coal valued at £394,400 were raised; the gold production amounted to 437,343 fine ounces valued at £1,857,716.

Trade statistics for 1926-27 showed exports valued at £15,151,959 and imports of £18,374,450. Revenues in the same year totaled £9,750,833 and expenditures, £9,722,588. For the year ending June 30, 1927, the state had 3918 miles of state government railways, and 450 miles of Commonwealth line, the latter being the western portion of the Trans-Australian line, which links the State Railway system to those of the other states of the Commonwealth. For the year ending June 30, 1928, revenues of £3,858,051, operating expenses of £2,910,811, and net earnings after the deduction of charges of £26,871, were reported by the Western Australian Government Railways. These figures represent increases of £250,000 in gross revenues and £225,118 in expenses, but a decrease of £7885 in net earnings over the previous year. The small net earnings were probably due to increased interest charges since the increase shown in gross profit was more than offset by an increase in interest costs. A total of 5,900,883 train miles, an increase of 419,403 over the previous year, were operated. There was also an increase of 256,352 tons in freight carried and of 294,966 in the number of passengers carried. Freight-traffic revenues increased £205,964 over 1926-27 and passenger revenues, £47,894. Freight traffic accounted for more than two-thirds of the gross revenue.

Executive power is vested in a governor who acts through a responsible ministry; and legislative power in a parliament of two houses, a council of 30 members elected for six years and an assembly of 50 members elected for three years. Governor in 1928, Col. Sir William Robert Campion; premier, treasurer, and minister for forests, Philip Collier.

WESTERN RESERVE UNIVERSITY. A non-sectarian institution for the higher education of men and women at Cleveland, Ohio, chartered in 1826. The enrollment for the autumn of 1928 in the regular day curricula was 3869, distributed as follows: Adelbert College, for men, 935; college for women, 811; school of medicine, 245; school of law, 289; school of pharmacy, 114;

school of dentistry, 174; school of nursing, 255; school of library science, 81; graduate school, 438; school of applied social science, 207; school of education, 389; Cleveland College, 161. The enrollment in Cleveland College, the evening school of the University, was 3114, and the enrollment in the courses for teachers in service, was 1838. The summer school in 1928 had a registration of 1983. In the autumn, the faculty numbered 386 professors, associate professors, assistant professors, and instructors, 152 lecturers and demonstrators, and 130 fellows and assistants. The endowment of the University was \$7,819,483, and the income for the year, \$1,739,906. The library contained 300,000 volumes. Within the year, the student health service was established in a separate building and it conducted a medical examination of all students, in addition to having general supervision over the health of the student body. The health-service staff included a medical director, assistants, a nurse, and a dietitian. Notable progress was made in the development of graduate study and research in the appointment of additional men who were to devote all their time to graduate instruction and research. Under a contract entered into by the University and the Board of Education of the City of Cleveland, the former assumed responsibility for the operation of the Cleveland School of Education, with which the University merged its own departments of education and nursery, kindergarten, and primary training. The College for Women received a gift of \$50,000 under the will of Mrs. Seville H. Morse, the income to be used as a loan fund to help students of this college who need financial assistance. President, Robert E. Vinson, D.D., L.H.D., LL.D.

WEST POINT. See UNITED STATES MILITARY ACADEMY.

WEST SPITZBERGEN. The largest and most important of the islands of the Svalbard Archipelago (q.v.), which became of international interest after it passed under the sovereignty of Norway in 1925. Norway promulgated drastic laws for the conservation of game; reindeer cannot be killed until 1935, and all hunting must be done under license and strict regulations. There are immense deposits of coal of high quality, the reserves being estimated at over 10,000 million tons. Mining continues throughout the year, but shipments are usually confined to six months. The shipments were in 1922, 103,000 tons; in 1924, 451,914 tons; in 1925, 414,412 tons.

The population of about 2000 in summer falls in winter to 1500. Ample provisions are made for health and comfort, with church, school, hospital, movies, etc. The largest settlement is Longyear City, at Ice Fiord.

WEST VIRGINIA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 1,463,701. The estimated population on July 1, 1928, was 1,724,000. The capital is Charleston.

AGRICULTURE. The table on this page presents the acreage, production, and value of the principal crops in 1927 and 1928.

MINERAL PRODUCTION. The heavy coal production of the mines of the State was sustained in 1927 and exceeded the bituminous production of Pennsylvania for that year in quantity though not in value. There were mined in West Virginia in 1927, 145,122,447 net tons of coal as compared with 143,509,340 in 1926; the value of coal

Crop	Year	Acreage	Prod. bu.	Value
Hay	1928	826,000	1,198,000 ^a	\$17,535,000
	1927	843,000	1,277,000 ^a	19,092,000
	1928	459,000	16,524,000	17,020,000
Corn	1927	441,000	14,774,000	14,774,000
	1928	60,000	7,500,000	6,000,000
	1927	52,000	5,876,000	7,345,000
Potatoes	1928	122,000	1,586,000	2,178,000
	1927	135,000	1,796,000	2,461,000
	1928	204,000	5,712,000	3,599,000
Wheat	1927	217,000	5,251,000	3,361,000
	1928	6,800	5,100,000 ^b	1,178,000
	1927	4,500	3,488,000 ^b	855,000

^a tons, ^b pounds.

mined was \$249,730,000 for 1927 and \$264,736,000 for 1926. Coke production in the State was increasingly from by-product ovens. These furnished, in 1927, 1,401,000 short tons of coke; in 1926, 1,129,862. This product had a value, for 1926, of \$4,265,884. The entire coke output of the State for 1926 was 1,713,461 short tons, in value, \$6,918,103. Blast furnaces of the State produced in 1927, 504,816 long tons of pig iron; in 1926, 364,302. Natural gas, second in importance of the State's mineral products, attained a yield of 180,223,000 M cubic feet in 1926, the latest recorded year; in 1925, of 180,345,000 M cubic feet; in value, \$76,396,000 for 1926 and \$70,903,000 for 1925. Natural gas yielded in 1927, 64,200,000 gallons of gasoline and in 1926, 63,807,000 gallons; in value, \$5,592,000 for 1927 and for 1926, \$7,706,000. Petroleum production was 6,009,000 barrels in 1927 and 5,496,000 barrels in 1926; in value, 1927, \$18,300,000 (estimated); 1926, \$20,560,000. Clay products were valued at \$16,121,172 for 1926 and for 1925, \$15,293,371. Stone, lime, sand, and gravel production were important. The total value of the State's mineral products was \$395,941,940 for 1926; for 1925, \$333,527,697.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$12,952,347 (of which \$2,228,610 was for local education); for interest on debt, \$2,510,508; for permanent improvements, \$11,964,378; total, \$27,427,233 (of which \$12,452,106 was for highways, \$2,319,868 being for maintenance and \$10,132,238 for construction). Revenue was \$20,758,241. Of this, property and special taxes formed 23.4 per cent; departmental earnings and charges for the services of State officers, 8 per cent; sales of licenses and taxation of gasoline, 57.7 per cent. Assessed valuation of property was \$2,130,255,951; State taxation thereon, \$2,892,358. Net funded State debt on June 30, 1927, was \$51,536,254. Highway bonds, to the amount of \$49,250,000, formed the chief part of the gross outstanding debt.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 4006.64. There were built in 1928, 12 miles of first, and 5.48 of second, track.

EDUCATION. An official State-wide survey of education was completed in 1928 and its results were published in four volumes. There was effected, according to State Superintendent Ford's statement in the *Journal* of the National Education Association, an important revision of the course of study in the elementary public schools, and a comprehensive system of teacher training was laid out. The school population of the State in the academic year 1927-28 was placed at 513,065. There were enrolled in the public schools

of the State 401,114 pupils. Of these, 364,457 were in elementary schools and 36,657 in high schools. Expenditures for public-school education in 1927-28 totaled \$25,469,477. The salaries of teachers averaged \$1151.08.

CHARITIES AND CORRECTIONS. A statutory body, the State Board of Control, composed of three members, constituted in 1928 the chief central administrative agency in matters of care and custody of individuals. There were also an independent Bureau of Negro Welfare, a State Board of Children's Guardians, and a State Crippled Children's Council, as well as a Penitentiary Parole Board. There were seven State hospitals, situated at Weston, Spencer, Lakin (colored), Huntington, McKendree, Welch, and Fairmont; two tuberculosis sanatoria, at Hopemont (white) and Denmar (colored); and the following correctional institutions; West Virginia Penitentiary, Moundsville; Industrial School for Boys, Pruntytown; Industrial Home for Girls, at Industrial; State Industrial School for Colored Boys, Lakin; State Industrial Home for Colored Girls, Huntington.

POLITICAL AND OTHER EVENTS. Proceedings against former State Auditor John G. Bond, growing out of Governor Gore's investigation of the Auditor's office in 1926, led to the conviction of Bond March 10, on a charge of embezzlement and larceny. He had previously been impeached by the Legislature, and had thereupon resigned his office. Owing largely to the activity in the non-union coal-mining field of the State, the bituminous coal output of West Virginia continued large in the early months of 1928, in spite of the renewed union-labor difficulties in the spring, and ran little below the Pennsylvania output.

ELECTION. The popular vote of the State for President in the election of November 6 gave Hoover (Republican) 375,551 votes; Smith (Democratic), 263,784. Hoover obtained a higher majority than that of Republican candidates in the last two preceding presidential elections. The vote for Smith (Democratic) was about as great as that for Davis in 1924. For the United States Senate, Dr. Henry B. Hatfield, Republican, won, defeating Senator M. M. Neely, Democrat, running for reelection. A prevailing Republican delegation of United States Representatives was elected. William G. Conley, Republican, was elected Governor, with subordinate officers of his own party.

OFFICERS. Governor, Howard M. Gore; Secretary of State, George W. Sharp; Treasurer, W. S. Johnson; Auditor, Sam T. Mallison; Attorney-General, Howard B. Lee; State Superintendent of Free Schools, George M. Ford; Commissioner of Agriculture, John W. Smith.

JUDICIARY. Supreme Court: President, John H. Hatcher; Associate Judges, W. N. Miller, Frank Lively, Homer B. Woods.

WEST VIRGINIA UNIVERSITY. An institution for the higher education of men and women at Morgantown, W. Va., founded in 1867. In the autumn of 1928, the enrollment was 2650, of whom 1850 were men and 800 women. There were 1057 registered in the summer school of the same year. The faculty numbered more than 300. The libraries contained 92,000 volumes. In 1928 a new women's gymnasium was completed at a cost of \$272,000 and a field house for men at a cost of \$280,000. John Roscoe Turner, Ph.D., was elected president to succeed Frank

B. Trotter, LL.D., on July 1, 1928, and was inaugurated on November 28. In his inaugural address, he announced among his major purposes the establishment of a graduate school, the extension of research, and other far-reaching plans for the development of the University.

WEYMAN, wa'man, STANLEY JOHN. English novelist, died at Ruthin, Wales, April 10. He was born at Ludlow, England, Aug. 7, 1855. He was educated at Shrewsbury and at Christ Church, Oxford, graduating with honors in modern history, and became a barrister in 1881. He gave up the practice of the law to devote himself entirely to writing after his first romance, *The House of the Wolf*, published in 1890, met with public favor. It was followed by a long series of historical novels, which established Weyman as one of the most successful tellers of tales of that genre in his generation. In 1893 appeared his *A Gentleman of France*, singled out for special praise by Andrew Lang; it was translated into several languages. Weyman's lists of books include: *Under the Red Robe* (1894); *My Lady Rotha* (1894); *Memoirs of a Minister of France* (1895); *The Red Cockade* (1895); *The Man in Black* (1896); *Shrewsbury* (1897); *The Castle Inn* (1898); *Sophia* (1900); *The Abbess of Vlaye* (1904); *Starvecrow Farm* (1905); *The Wild Geese* (1908); *The Great House* (1919); *Ovington's Bank* (1922); *The Traveller in the Fur Cloak* (1925) and *Queen's Folly* (1925).

WHARTON, ANNE HOLLINGSWORTH. American author, died at Philadelphia, Pa., July 29. She was born at Southampton Furnace, Pa., Dec. 15, 1845. She was educated at a private school in Philadelphia and early became interested in the Colonial and Revolutionary periods of American history. She wrote many entertaining books and magazine articles and children's stories in this field. She was the first historian of the National Society of Colonial Dames of America, a judge of the American Colonial exhibit at the World's Columbian Exposition, Chicago, 1893, and a life member of the Historical Society of Pennsylvania. She was made an honorary Litt.D. by the University of Pennsylvania in 1924. Her publications include: *St. Bartholomew's Eve* (1866); *The Wharton Family* (1880); *Through Colonial Doorways* (1893); *Colonial Days and Dames* (1894); *A Last Century Maid* (1895); *Life of Martha Washington* (1897); *Heirlooms in Miniatures* (1897); *Salons, Colonial and Republican* (1900); *Social Life in the Early Republic* (1902); *An English Honeymoon* (1908); *In Château Land* (1911); *A Rose of Old Quebec* (1913); *English Ancestral Homes of Noted Americans* (1915); *In Old Pennsylvania Towns* (1920). She was the associate editor of *Furnaces and Forges in the Province of Pennsylvania* (1914).

WHEAT. A summary of the world's wheat supplies and requirements for the year beginning Aug. 1, 1928, by the International Institute of Agriculture, Rome, placed the quantity of wheat available for export at 829,000,000 bushels distributed among the surplus countries as follows: Canada, 450,000,000 bushels; United States, 321,000,000 bushels; Argentina, 33,000,000 bushels; and Australia, 25,000,000 bushels. For Argentina and Australia, the commercial year coincides with the calendar year. Other countries having an export surplus were Bulgaria, Kingdom of the Serbs, Croats; and Slovenes, Hungary, Rumania,

Algeria, and Tunis. India, owing to a light crop, and the United Socialist Soviet Republics, as a result of a poorly distributed production in relation to exportation, were not considered as entering into the export trade during this commercial season. The available surplus from the 1928-29 production in Argentina and Australia was forecast at 275,000,000 bushels, making an available surplus of 1,180,000,000 bushels for the commercial year Aug. 1, 1928, to July 31, 1929. The probable requirements of the importing countries were estimated at 845,000,000 bushels.

The total 1928 production of thirty-five countries reporting was placed at 4,044,139,000 bushels, or 9.1 per cent above the production of 1927 and 17 per cent over the average yield for the five years 1922-1926. The estimates of production for the more important wheat-growing countries outside the United States were as follows: United Socialist Soviet Republics, 859,789,000 bushels; Canada, 500,613,000 bushels; India, 289,781,000 bushels; France, 277,655,000 bushels; Italy, 228,596,000 bushels; Spain, 129,591,000 bushels; and Germany, 126,462,000 bushels. The production of Argentina for the crop year 1927-28 was 239,161,000 bushels and of Australia, 116,184,000 bushels. Early estimates placed the Australian crop of 1928-29 at 154,000,000 bushels.

As estimated by the U. S. Department of Agriculture, the wheat production of the United States in 1928 was 902,749,000 bushels on 57,724,000 acres, the rate per acre being 15.6 bushels. This compared with a production of 878,374,000 bushels, an acreage of 58,784,000 acres, and an average acre yield of 14.9 bushels in the preceding year. On the basis of the average farm price on Dec. 1, 1928, 97.2 cents per bushel, the total value of the crop was \$877,193,000 as against \$1.115 per bushel and a total value of \$979,813,000 in 1927.

Of the total wheat area in 1928, 36,179,000 acres were in winter wheat and 21,545,000 acres in spring wheat. The production of winter wheat was 578,964,000 bushels at the rate of 16 bushels per acre; and of spring wheat, including durum wheat, was 323,785,000 bushels at the rate of 15 bushels per acre. In 1927 the winter wheat production was 552,747,000 bushels and the spring wheat production 325,627,000 bushels.

The distribution of winter wheat production in 1928 showed marked changes as compared with other years. In the East North Central group of States, which produced 108,429,000 bushels in 1927, severe winter-killing as the main factor reduced the yield to 52,585,000 bushels. The West North Central States, producing 210,538,000 bushels in 1927, yielded 274,621,000 bushels in 1928. The South Central States showed a marked increase in yield and the Eastern and Western States a moderate decrease.

Of 39 States reporting winter-wheat production, the yields of the more important producing States were as follows: Kansas, 177,361,000 bushels; Nebraska, 66,697,000 bushels; Oklahoma, 59,576,000 bushels; Washington, 35,600,000 bushels; Texas, 22,176,000 bushels; and Oregon, 20,088,000 bushels. The average yields per acre ranged from 8 bushels in Kentucky to 27 bushels in Arizona. The average yield in Kansas was 17 bushels per acre. The average farm price of winter wheat on Dec. 1, 1928, ranged from 80 cents per bushel in Montana to \$1.56 in Alabama. The average farm price, less than a dol-

lar per bushel in only ten States, was \$1.036 for all the producing States. Of the 25 States reporting spring-wheat production exclusive of durum wheat, the yields in the leading States were as follows: North Dakota, 69,973,000 bushels; Montana, 64,790,000 bushels; South Dakota, 19,312,000 bushels; Idaho, 18,304,000 bushels; and Minnesota, 15,747,000 bushels. The range in the average yield of spring wheat per acre was from 10.3 bushels in South Dakota to 33 bushels in Utah. The average farm price on Dec. 1, 1928, was 91.3 cents per bushel with a range from 82 cents in Wyoming to \$1.65 in Maine.

The production of durum wheat in the four important producing States was estimated at 92,770,000 bushels, as compared with 79,100,000 bushels in 1927, and an average of 61,702,000 bushels for the five preceding years. The average farm price of durum wheat on Dec. 1, 1924, was 71.9 cents per bushel, or 28.7 cents below the price the year before. The yields of the four States reported were as follows: North Dakota, 72,950,000 bushels, or about 79 per cent of the total production; South Dakota, 5,568,000 bushels; and Montana, 278,000 bushels.

During the year ended June 30, 1928, the United States exported 145,999,000 bushels of wheat and 12,921,000 barrels of wheat flour and imported 15,706,000 bushels of grain and 1,123,000 pounds of flour.

The average cost of producing wheat in the United States in 1927, as based by the Department of Agriculture on reports from 3119 farms, was \$21.30 per acre and \$1.18 per bushel. It was produced at lower costs in the Western and North Central States than in the North Atlantic, South Atlantic and South Central States. The average crop production cost per bushel in 1927 was 6 cents more than in the preceding year and from 4 cents to 14 cents less than for the four years 1922-25. The protein content of wheat was being more generally recognized as a factor determining its value and in some States farmers were selling their product on the basis of the percentage of protein it contains.

The increase in the Canadian crop in 1928 was reported as largely offset by dockage and frost damage. As indicated by inspection, about 5 per cent of the crop would be classified as feed, 14 per cent as grading No. 3, and 15 per cent as grading No. 5. The marketing of most of the Canadian crop was being handled by wheat pools or farmers' cooperative organizations which operate over 900 country elevators and terminal elevators with a large total handling capacity.

The use of the combined harvester and thresher, or the "combine," was continuing to increase and types of machines had been developed to meet different needs and requirements. In some instances, grain harvested with the combine needs special attention to avoid spoilage in storage.

The Grain Futures Administration of the United States Department of Agriculture, on July 3, 1928, began the issue of daily reports as to the volume of open commitments at the close of trading in the grain exchanges of the country. The campaign of eradication of the common barberry as a spreader of black stem rust of wheat was continued, and a reduction in losses from rust since the campaign started in 1918 was reported.

WHEAT RUST; WHEAT SMUT. See BOTANY, under *Plant Diseases*; also WHEAT.

WHITEING, whit'ing, RICHARD. English

journalist and novelist, died at London, June 29. He was born at London, July 27, 1840. He received instruction as an engraver, but abandoned that profession for journalism. He began his career as a writer with a series of satirical sketches contributed to the *London Evening Star*; they were afterward published as *Mr. Sprouts—His Opinions* (1867). Subsequently, he served as editorial writer and correspondent for several English dailies, including the *Manchester Guardian* and the *London World*. He was for a while a leader writer for the *London Daily News*. In 1876 appeared his first novel, *The Democracy*, which was followed 12 years later by *The Island*. But he is best known for his *No. 5 John Street* (1899), a vivid description of life in the London slums. Later, he published: *The Life of Paris* (1900); *The Yellow Van* (1903); *Ring in the New* (1906); *All Moonshine* (1907); *Little People* (1908); *A Little Book About London* (1912); *My Harvest* (1914); an autobiography; and (with Dame Genevieve Ward) *Both Sides of the Curtain* (1918).

WHITMAN, whit'măn, WILLIAM. American textile manufacturer, died at Brookline, Mass., September 20. He was born at Round Hill, N. S., May 9, 1842, and worked in a dry goods store at St. John, N. B., when he was twelve years old. He removed to Boston two years later, and was again employed in a dry goods house for eleven years. He was made treasurer of the Arlington Woolen Mills, Lawrence, Mass., in 1867, and was president of the company from 1902 to 1913. Mr. Whitman's interests and influence in the textile industry extended to a number of cities; besides having managed several firms which handled the selling department of the business, he was at one time president of a number of manufacturing companies, including the Calhoun Mills, South Carolina, and the William Whitman Company, Boston. At the time of his death, he was chairman of the board of directors of the latter company, and at the head of four concerns in New Bedford, Mass. He served as president of the National Association of Wool Manufacturers, 1885-94 and 1904-11, being on the executive committee in the interval between his terms. Mr. Whitman led in the initiation of the manufacture of fine worsted and fancy cotton goods in the United States. He was a leading authority on the tariff situation and frequently acted as an adviser in the preparation of tariff legislation. His economic writings received serious attention, especially: *Free Raw Materials as Related to New England Industries*; *Objections to Reciprocity on Constitutional and Practical Grounds*; *The Tariff Revisionist, an Example of the Nature of His Demand* (1906); and *What Are the Protected Industries* (1908).

WIEN, ven, WILHELM. German physicist, and winner of the Nobel Prize in 1911, died at Munich, August 31. He was born at Gaffken, near Fischhausen, East Prussia, Jan. 13, 1864, and after studying at the universities of Göttingen and Heidelberg, he specialized in advanced mathematics and physics at the University of Berlin. He worked as an assistant in the Imperial Physical-Technical Institute, Charlottenburg, 1890-96, also lecturing at the University of Berlin from 1892. When he left Charlottenburg, he was appointed professor in the Technische Hochschule, Aachen, and he subsequently taught at the various institutions, serving as professor of physics in the University of Munich at the

time of his death. Professor Wien visited the United States and lectured at Columbia University in 1913. He received the Nobel Prize for his experiments in radiation, particularly his work in cathode rays, in 1911. Besides editing *Annalen der Physik*, and *Handbuch der Experimental Physik*, he wrote, *Lehrbuch der Hydrodynamik* (1900); and *Neuere Probleme der Theoretischen Physik* (1913).

WILBUR, CRESSY LIVINGSTON. American statistician, died at Utica, N. Y., August 9. He was born at Hillsdale, Mich., Mar. 16, 1865, and after completing advanced courses in philosophy at Hillsdale College in 1886 and 1889, he studied for three years in the Department of Medicine and Surgery at the University of Michigan, and in 1890 he was graduated from Bellevue Hospital Medical College, of New York University. He served as chief of the Division of Vital Statistics of the State of Michigan, 1893-1905, and delivered special lectures on that subject at the Medical Department of the University of Michigan during the last three years of his term of office. Having also become medical referee for the United States Census Bureau, 1901-06, he was appointed chief statistician of vital statistics, July 1, 1906, holding that position until July 31, 1914. On April 7, of that year, he became affiliated with the New York State Department of Health, as director of the Division of Vital Statistics. Dr. Wilbur acted as delegate to several medical conferences, both at Washington, D. C., and at Paris. Besides frequent contributions to scientific periodicals, he edited: the *Michigan Annual Registration Reports* (1891-1903); the *Bertillon Classification of Causes of Death* (1899); the *Manual of International Classification of Causes of Death* (1902-1913); and the United States Census annual reports on mortality statistics (1905-12).

WILCOX, DELOS FRANKLIN. American expert in municipal government, died at New York, April 4. He was born at Ida, Mich., Apr. 22, 1873, and was graduated from the University of Michigan in 1894 and received his Ph.D. from Columbia University in 1896. He was editor of the *Civic News* at Detroit, Mich., 1905-07, after having been engaged in work relating to the improvement of city government, at Cleveland, Ohio, and Grand Rapids and Detroit, Mich. In 1907 he went to New York to become chief of the bureau of franchises of the Public Service Commission, First District. He resigned in 1913, and from 1914 to 1917 was deputy commissioner of the Department of Water Supply, Gas and Electricity, New York City. In 1919-20 he was adviser to the Federal Electric Railways Commission. In his private practice as a public utility expert, he advised a large number of cities on franchise rate and valuation matters. He wrote: *The Study of City Government* (1897); *The American City* (1904); *The Government of Great American Cities* (1908); *Municipal Franchises* (2 vols., 1910-11); *Great Cities in America* (1910); *Government by All the People* (1912); *Analysis of Electric Railway Problems* (1921); *Depreciation in Public Utilities* (1925). He also wrote *Ethical Marriage* (1900).

WILDER, HARRIS HAWTHORNE. American zoölogist and educator, died February 27. Born at Bangor, Me., Apr. 7, 1864, he was graduated from Amherst in 1886, and received the Ph.D.

degree from the University of Freiburg, Baden, in 1891. Having taught at the Jefferson High School, Chicago, 1886-89, and at the Lake View High School, 1891-92, he was appointed professor of zoölogy at Smith College in the latter year, where he remained until his death. As part of his extensive study of prehistoric man, Dr. Wilder specialized in the embryology, anatomy, and teratology of vertebrates and in the epidermic markings of the soles and palms of primates. Besides his many zoölogical papers, Dr. Wilder wrote the following books: *Invertebrate Zoölogy* (1894); *Synopsis of Animal Classification* (1902); *The History of the Human Body* (1910, 2d ed. 1923); *Personal Identification* (with B. Wentworth, 1918); *Manual of Anthropometry* (1920); *Man's Prehistoric Past* (1923); and *The Pedigree of the Human Race* (1925).

WILKES-BARRE. See CELEBRATIONS.

WILKINS ANTARCTIC EXPLORATION.

See POLAR RESEARCH.

WILLIAM AND MARY, COLLEGE OF. An institution for the higher education of men and women at Williamsburg, Va., founded in 1693. The enrollment for the autumn semester of 1928 was 1356, of whom 605 were women and 745 were men. There was also an enrollment of 1818 students in extension classes in Norfolk, Richmond, and Newport News. The summer session had 850 students. There were 70 members on the faculty. The college had productive funds to the amount of \$332,557, and the income for the year was \$729,365. The library contained 60,000 volumes. President, Julian A. C. Chandler, Ph.D.

WILLIAMS, FREDERICK WELLS. American educator and sinologist, died at New Haven, Conn., January 22. He was born Oct. 31, 1857, at Macao, the Portuguese colony in China, where his father, Samuel Wells Williams (1812-84) was stationed as a missionary; the elder Williams was the author of *The Middle Kingdom*, one of the first authoritative books in English on China. The younger Williams was graduated from Yale, 1879, and studied for two years at the universities of Göttingen, Berlin, and Paris. From 1883 to 1885 he was assistant librarian of the Yale library, and then for six years literary editor of the *National Baptist*. He returned to Yale as instructor in Oriental history, 1893-1900, and from 1900 to 1925, when he retired as emeritus, he was assistant professor of modern Oriental history. He was chairman of the board of trustees of Yale-in-China. He assisted his father in the preparation of *The Middle Kingdom* (1883), and wrote a biography of his father (1889), besides the following: *Chinese Folklore* (Smithsonian Institution report for 1900); *Problems of Chinese Immigration in Farther Asia* (1900); "China and Japan" (bk. iv., vol. ii., *History of All Nations*) (1903); *A History of the Class of 1879, Yale College* (1906); *Relations Between the United States and China* (1910); *Anson Burlingame and the First Chinese Mission to Foreign Powers* (1912); *The Best Hundred Books on China* (1924). He also edited books on Siam and Japan and wrote many articles on Chinese and other Asiatic subjects.

WILLIAMS, HENRY G. American educator, died at Wilmington, Ohio, June 15, at the age of sixty-three. He was superintendent of schools at Lynchburg, Ohio, and later filled similar positions at Belleaire and Marietta, Ohio. In 1901 he became dean of the normal college of the

University of Ohio, at Athens, and filled that position until 1915, when he was appointed Commissioner of Public Instruction for Ohio. In 1927 he became president of Wilmington College, Wilmington, Ohio, and held the office at his death.

WILLIAMS, TALCOTT. American journalist and educator, died at New York, January 24. He was born July 20, 1849, at Abeih, Turkey, where his father and mother were Congregationalist missionaries. He was graduated from Amherst College in 1873. Entering newspaper work, he was on the staff of the *New York World* in 1873-77, and served as Washington correspondent of the *New York Sun* and the *San Francisco Chronicle* in 1877-79, and as editorial writer for the Springfield, Mass., *Republican* in 1879-81. Thereafter he was an editor of the *Philadelphia Press*, until in 1912 he became director of the new School of Journalism at Columbia University, built and endowed by Joseph Pulitzer. With Frank Moore Colby, he was editor of the second edition of the *NEW INTERNATIONAL ENCYCLOPEDIA*.

Dr. Williams was quite well known as a public speaker. He was elected vice president of the Pennsylvania Society for the Prevention of Tuberculosis and an honorary member of the Pennsylvania State Bar Association. In 1913 he served as president of the American Conference of Teachers of Journalism. He resigned as director of the School of Journalism in 1919, and received the title of director emeritus from the trustees of Columbia University. He was a member of the American Philosophical Society, the American Oriental Society, and the American Academy of Political and Social Sciences, and held officerships and memberships in numerous other societies. From 1912 to 1915 he was president of the Honest Ballot Association, thereafter becoming a director. While lecturing on journalism and other subjects, he found time to write literary, art, and dramatic criticisms. Dr. Williams received honorary degrees from Amherst, the University of Pennsylvania, Western Reserve University, Brown University, Hobart College, Pennsylvania College, Franklin and Marshall College, the University of Rochester, and the University of Pittsburgh. He wrote: *Turkey, a Problem of To-day* (1921); *The Newspaper Man* (1922).

WILLIAMS COLLEGE. A non-sectarian college for men at Williamstown, Mass., founded in 1793. The enrollment for the autumn of 1928 totaled 807, including 9 graduate students, 170 seniors, 183 juniors, 212 sophomores, and 233 freshmen. There were 82 members on the faculty, of whom 14 were new appointments. The productive funds of the College amounted to \$5,591,579, and the income for the year ending June 30, 1928, was \$723,803. The library contained 124,733 volumes, Lehman Hall, a freshman dormitory, presented by Colonel Herbert H. Lehman of the Class of 1899, New York City, was completed during the year. President, Harry Augustus Garfield, LL.D. See POLITICS, INSTITUTE OF.

WILLIS, FRANK BARTLETTE. American educator and United States Senator from Ohio, died suddenly at Delaware, Ohio, March 30, while waiting to deliver an address in his campaign for the Republican nomination for the Presidency, as the "favorite son" of Ohio. He was born at Lewis Center, Ohio, Dec. 28, 1871.

He was graduated from Ohio Northern University in 1893, and from 1894 to 1906 held the chair of history and economics at the university. He early took an active interest in politics and made a speaking tour of Ohio for the Republican presidential nominee in 1896. In 1900 he was elected to the Ohio House of Representatives and served four years. In 1906 he gave up his professorship of history and economics, having studied law and having been admitted to the Ohio bar, and for a short time he was professor of law at the university. In 1910 and in 1912 he was elected to the National House of Representatives, and two years later was chosen Governor of Ohio in succession to James M. Cox. In 1916, however, the two ran against each other again for the governorship, and this time Cox was successful. Willis was an unsuccessful candidate for governor in 1918, but in 1920 was elected United States Senator in place of Warren G. Harding, who had been elected President. Mr. Willis had begun his second term in the Senate at the time of his death, having been reelected in 1926. He was one of the leaders of the Republicans in the Senate and was especially noted as an orator. In 1916 he placed Theodore E. Burton in nomination at the Republican National Convention, and in 1920 he performed the same office for the successful candidate, Senator Harding.

WILLS, SIR GEORGE ALFRED, BARONET. British industrialist and philanthropist, died at Burwalls, Leigh Woods, near Bristol, England, July 11. He was born June 3, 1854, and was educated privately at Clifton, and then attended Mill High School in Middlesex. In 1874 he entered the extensive family tobacco business, W. D. & H. O. Wills, at Bristol, and became in time the managing director. When the business was taken over in 1901 by the Imperial Tobacco Company of Great Britain, he was made deputy chairman and he succeeded his cousin, the late Lord Winterstoke, as chairman in 1911. He retired in 1924. He had been created a baronet in 1923. Sir George was a director of the Great Western Railway and was sheriff of Bristol, 1899-1900. He held the honorary degree of D.C.L. from Oxford and that of LL.D. from the University of Bristol. He was the possessor of one of the largest fortunes in Great Britain and was noted for his munificence, especially to the philanthropies and public institutions of Bristol. He and his brother presented the main building to Bristol University, at a cost of more than £500,000.

WILSON, LUTHER BARTON. American clergyman, retired bishop of the Methodist Episcopal Church, died at Roland Park, Md., June 4. He was born at Baltimore, Md., Nov. 14, 1856, and was graduated from Dickinson College in 1875, and from the medical department of the University of Maryland in 1877. After entering the ministry of the Methodist Episcopal Church in 1878, he served in several pastorates, and was a presiding elder in the Baltimore Conference when he was elected bishop in 1904. He was assigned to the Chattanooga, Tenn., district, and four years later was transferred to the metropolitan district of New York, and he remained there to the end of his active career. He was one of the organizers of the Anti-Saloon League, in 1895, and was its first vice president, succeeding to the presidency in 1901 and holding the office many years. For more than a

quarter of a century, Bishop Wilson was one of the leaders of his denomination, holding several high offices; being a prominent figure in public life, he was much in demand as an orator. In 1917 he went to France with the A. E. F. as a leader in Y. M. C. A. work, and was active throughout the War period. He was a director of the Church Peace Union and a trustee of Dickinson College and of the Drew Theological Seminary. He received the degree of D.D. from Dickinson in 1892 and that of LL.D. in 1904. Wesleyan University also conferred the degree of LL.D. on him in 1913, and Syracuse University that of L.H.D. in 1912.

WILSON AWARD. See WOODROW WILSON AWARD.

WINDWARD ISLANDS. The name applied to a group of islands in the West Indies, comprising Grenada, St. Vincent, and St. Lucia, together with the Grenadines (which are one-half under Grenada and one-half under St. Vincent); forming the eastern limit of the Caribbean Sea between Martinique and Trinidad; a British possession. (See articles on the islands mentioned above.) Each of the islands is under its own government, but they are united for certain common purposes and have a court of appeals. Governor and commander-in-chief in 1928, Sir Frederick Seton James.

WINGATE, GEORGE WOOD. American lawyer, advocate, and organizer of rifle practice, died at New York, March 22. He was born at New York, July 1, 1840, and was educated at the public schools. During the Civil War, he went to the front with a New York regiment, and also saw service in New York City during the Draft Riots. He was in law practice in New York many years and was assistant general counsel for the Long Island Railroad. For many years he was one of the outstanding American advocates of rifle practice. In 1867 he drew up rules for systematic practice by Company A, Twenty-second Regiment, New York National Guard, of which he was then captain. The publication of these rules (the first of the kind to be formulated in the United States) led to the organization in 1871 of the National Rifle Association of America, of which he was first secretary and later president for 25 years. He was also founder, in 1904, of the Public Schools Athletic League, and was a member of the general committee of the Boy Scouts. He wrote: *Manual for Rifle Practice* (1872, with several subsequent editions); *The Great Cholera Riots* (1880); *Through the Yellowstone Park on Horseback* (1886); *History of the Twenty-second Regiment, National Guard of New York* (1896), and many articles on military subjects.

WINSLOW, E(hen) EVELETH. American army officer and engineer, died at Raleigh, N. C., June 28. He was born in the District of Columbia, May 13, 1866, and was graduated from the United States Military Academy at the head of his class in 1889. He studied at the Engineering School of Application, graduating in 1892. His services were almost entirely confined to the engineering works of the United States Army, but he commanded a company at the Battle of San Juan, Cuba, in 1898. He was connected with river and harbor and fortification work at various times at Mobile, Ala., Wilmington, N. C., Norfolk, Va., and Honolulu. T. H. Winslow was designing engineer on the fortification of the Canal Zone and a member

of the advisory board on the fortification of Chesapeake Bay and of Guantanamo Bay, Cuba. In 1914 he was made assistant to the Chief of Engineers of the Army. During the World War, he organized the engineering troops of the Army, and received the Distinguished Service Medal in recognition of his efforts. He attained the rank of brigadier general in the National Army in 1917, and was honorably discharged as such in 1919. In the regular establishment, he held the rank of colonel when he was retired, Nov. 1, 1922.

WIRELESS TELEGRAPHY. See RADIO TELEPHONY AND BROADCASTING.

WISCONSIN. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,632,607. The estimated population on July 1, 1928, was 2,953,000. The capital is Madison.

AGRICULTURE. The following table presents the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Hay	1928	3,477,000	5,296,000 ^a	\$74,756,000
	1927	3,649,000	7,283,000 ^a	89,849,000
Corn	1928	2,121,000	91,203,000	71,138,000
	1927	2,100,000	68,253,000	57,330,000
Oats	1928	2,495,000	108,532,000	46,669,000
	1927	2,422,000	98,247,000	43,826,000
Potatoes	1928	278,000	31,970,000	12,738,000
	1927	260,000	23,920,000	20,332,000
Barley	1928	725,000	26,898,000	17,484,000
	1927	620,000	21,390,000	16,042,000
Rye	1928	167,000	2,171,000	1,954,000
	1927	238,000	4,046,000	3,641,000
Tobacco	1928	37,000	49,025,000 ^b	8,824,000
	1927	31,000	33,170,000 ^b	5,315,000
Wheat	1928	104,000	2,141,000	2,262,000
	1927	145,000	3,142,000	3,676,000

^a tons, ^b pounds.

MINERAL PRODUCTION. After the production of pig iron, which attained a quantity of 235,597 long tons and a value of \$5,034,012 for 1926, the output of stone was the most important element of mineral production in 1926. It attained 2,852,070 short tons, as against 2,541,370 for 1925; in value, \$4,937,661 for 1926, and \$4,208,201 for 1925. The quantity of zinc mined in 1927 was 32,841 short tons; in 1926, 26,800. The value of zinc produced was \$4,203,648 for 1927 and \$4,020,000 for 1926. Of lead there were mined 2069 short tons in 1927 and 1546 in 1926; in value, \$260,694 in 1927 and \$247,360 in 1926. Iron mines in the State shipped 937,935 long tons of iron ore in 1927 and 1,238,885 in 1926, for which year this product was valued at \$3,178,156. Lime production was 196,000 short tons (estimated) for 1927, as against 216,214 for 1926; in value, \$1,680,000 (estimated) for 1927 and for 1926, \$1,896,772. The total value of the State's mineral products was \$21,711,736 for 1926; for 1925, \$19,205,380.

FINANCE. State expenditures in the year ended June 30, 1927, as reported by the United States Department of Commerce, were: for maintenance and operation of governmental departments, \$31,070,324 (of which \$5,562,672 was aid to local education); for interest on debt, \$123,459; for permanent improvements, \$13,656,704; total, \$44,850,487 (of which \$15,810,474 was for highways, \$4,444,044 being for maintenance and \$11,366,430 for construction). Revenue was \$46,428,373. Of this, property and special taxes formed 38.8 per cent; departmental earnings and

charges for officials' services, 9.6 per cent; sales of licenses and taxation of gasoline, 39.5 per cent. State taxes levied amounted to \$7,451,220. Only street railways were taxed for State purposes. Net funded State debt on June 30, 1927, was \$1,663,700.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 7355.99. There were built in 1928, 2.84 miles of additional first, and 26 of second, track.

EDUCATION. A new common-school equalization law was put into effect in the State in 1928, along with special provisions for the education of crippled children. The equalization law was characterized by an informant in the *Journal* of the National Education Association as making for a more equitable distribution of State aid to the local school systems, aid having been previously rendered on a somewhat different system. The school population of the State was given as 868,239 in the school year 1927-28; the total public-school enrollment as 518,035. There were enrolled in the elementary schools 412,065 pupils, and in the high schools 105,970. The total expenditure of the year for public-school education was \$54,432,522.41. The salaries of teachers averaged \$1459.

CHARITIES AND CORRECTIONS. The State Board of Control, created by statute of 1917, has for its chief function to maintain and govern the charitable, curative, penal, and reformatory institutions of the State. It consists of three members, who are appointed by the governor, one every two years for terms of six years, and one of whom under the statute must be a woman. It has power to authorize operations for the sterilization of inmates of criminal, insane, feeble-minded, and epileptic institutions in cases in which experts pronounce procreation inadvisable; also to administer Wassermann tests. It investigates and supervises county and municipal institutions. Under a law of 1923 it has authority to initiate a plan of employment on public works in time of industrial depression. It exercises control over prisoners released on probation; guardianship over dependent children in the State Public School; and powers as a commission in lunacy. The State institutions, with their inmate populations of October 31, 1928, were: State Hospital for Insane, Mendota, 724; Memorial Hospital, Mendota, 284; Northern Hospital for Insane, Winnebago, 639; Central State Hospital for Insane, Waupun, 197; School for Deaf, Delavan, 186; School for Blind, Janesville, 120; Workshop for Blind, 48; State Public School, Sparta, 438; Industrial school for Boys, Waukesha, 356; Industrial School for Girls, Milwaukee, 193; Industrial Home for Women, 83; State Reformatory, Green Bay, 542; State Prison, Waupun, 1013; Northern Colony and Training School (feeble-minded), Chippewa Falls, 1262; Southern Colony and Training School (feeble-minded), Union Grove, 384; State Sanatorium (tubercular), Statesan, 156; Tomahawk Lake Camp (tubercular convalescents), 39. The total institutional population was 6661.

LEGISLATION. The State Legislature held a special session in January, at the call of Governor Zimmerman, to provide revenue in order to meet an apprehended deficit in the State finances, due to the failure of revenue legislation in the regular 1927 session. A legislative inquiry into the practice, among members of the State

Railroad Commission, of taking part-time employment with public utility companies was held and the commission subsequently, in April, at the request of Governor Zimmerman, passed a resolution against the practice. An appropriation for the State University, which was passed, carried provision that the regents might borrow from the teachers' retirement fund, through a corporation created for the purpose, in order to build.

POLITICAL AND OTHER EVENTS. The State Supreme Court upheld, July 20, the constitutionality of the State insurance-rating law, under which the Insurance Commissioner had power to accept or overrule the inspection bureau of the insurance companies with regard to ratings on property and rules under which insurance might remain in effect. The decision was characterized by the State Attorney-General's office as departing from precedent in recognizing a delegation of legislative power to a State officer. The provision of the State constitution prohibiting the contracting of State debt was avoided by the State University, for the purpose of constructing the proposed Memorial Union Building. A corporation was formed to lease land from the Regents, borrow funds from the teachers' retirement fund, build the structure desired with these funds and lease the structure to the State. The State Supreme Court was consulted by officers of the teachers' retirement fund, and rendered an opinion favorable to the proceeding. The increasing interest in forest conservation in Wisconsin was marked by a commercial forestry conference held in Milwaukee at the end of March. The State Land Commission approved in May for Federal forest areas, subject to Federal acquisition, lands in five northern counties, to a combined total of 500,000 acres.

In Milwaukee at a local election held on April 14, the Socialist Mayor Hoan was retained in office for another term, but the number of Socialist aldermen was reduced to six out of a total of 19. The suburb of North Milwaukee voted for annexation to the city. Progress of a municipal harbor development was delayed by difficulty encountered in bringing about the construction by the Northwestern Railroad of a rail connection between car ferry slips and proposed classification yards. An arrangement was reached in July according to which this railroad, the Pere Marquette, and the harbor commissioners were to cooperate on the yard and car ferry slips, the latter to cost the city \$400,000; the Pere Marquette was to provide a car ferry between Milwaukee and Muskegon at an anticipated cost of \$800,000. The intention was to provide the city with an eventual port for ocean vessels, for the time when the projected waterway from the Lakes to the Atlantic should be complete. See **WORKMEN'S COMPENSATION.**

ELECTION. In the highest popular vote till then recorded in the State, Hoover, Republican presidential candidate, gained at the election of November 6 the electoral support of the State. He received 544,205 popular votes; Smith, the Democratic candidate, received 450,259. The Smith vote, though a minority, was greatly in excess of those cast for Cox in 1920 and Davis in 1924. The centre of Smith's strength was in Milwaukee, where sentiment against Prohibition was widespread. Robert M. LaFollette, Jr., although the efforts of his group to make the State platform at the Republican State Conven-

tion in September had been defeated, ran for reelection as the Republican nominee to the United States Senate and defeated William H. Markham (Democrat). A completely Republican delegation was elected to the House of Representatives. Victor L. Berger, the Socialist Representative from Milwaukee, had apparently failed of reelection, but a recount was ordered. For Governor, Walter J. Kohler, Republican, defeated Albert G. Schmedeman, Democrat, and the other Chief Republican candidates on the State ticket were likewise elected.

OFFICERS. Governor, Fred R. Zimmerman; Lieutenant-Governor, Henry A. Huber; Secretary of State, Theodore Dammann; State Treasurer, Solomon Levitan; Attorney-General, John W. Reynolds; State Superintendent of Schools, John Callahan.

JUDICIARY. Supreme Court: Chief Justice, Aad J. Vinje; Associate Justices, Marvin B. Rosenberry, Franz C. Eschweiler, Walter C. Owen, Christian Doerfler, Charles Crownhart, E. Ray Stevens.

WISCONSIN, UNIVERSITY OF. A State institution of higher education at Madison, Wis., founded in 1848. The enrollment for the autumn of 1928 was 9042, distributed as follows: Letters and Science, 6446; engineering, 962; agriculture (including home economics), 705; law, 341; medicine, 291; nursing, 99; music, 157; library, 41. For the summer session the enrollment totaled 5065, with the following distribution: Letters and science, medicine, music, and nursing, 4393; engineering, 200; agriculture and home economics, 292; law, 126; library, 54. The faculty numbered 1284 in the autumn of 1928, including 297 new members. The productive funds of the University amounted to \$1,025,313, and the income for 1927-28 to \$7,951,001. The library contained 796,000 volumes and 387,000 pamphlets. President, Glenn Frank, M.A., Litt.D., L.H.D., LL.D.

WISE, THOMAS ALFRED. American actor, died at New York, March 21. He was born at Faversham, England, Mar. 23, 1865, and was brought to America when three. He began his work as an actor in California in 1883 and was a favorite with American audiences for many years, until failing health affected his playing, about a year before his death. His greatest success was gained in the rôle of Senator William H. Langdon, in *The Gentleman From Mississippi*, 1908-11, which play he wrote with Harrison Rhodes. He appeared also in *Mr. Wilkinson's Widows*, *The Prince Chap*, *Are You a Mason?* *Mrs. Temple's Telegram*, and many other plays that were successful. Mr. Wise was very popular among his fellow players, and they honored him by election to high offices in their organizations. He was vice president of the Lambs, 1910-11, and was the Shepherd of that organization when he died. He was also a member of the governing boards of the Players, the Green Room Club, the Dramatists' Association and the Green Room Club of London.

WOELFKIN, CORNELIUS. American clergyman and a leader in the Baptist denomination in the United States, died at New York, January 6. He was born at New York, Sept. 16, 1859. He was educated at the public schools of New York, and educated himself in theology and other subjects while working as a painter. In 1886, after he had already preached for a year as a layman, at a church at Bagnall, N. Y.,

he was ordained in the Baptist ministry. In early years, he was a revivalist, going from church to church to preach. His first formal pastorate was that of the First Baptist Church of Hackensack, N. J., 1887-92; then he served as pastor of the North Church, Jersey City, N. J., 1892-94; pastor of Greene Avenue Church, Brooklyn, N. Y., 1894-1905; with the American Baptist Home Missionary Society, 1905-06. In the latter year his high reputation as a theologian and preacher, notwithstanding the fact that he was self-taught, brought him the chair of homiletics at the Rochester, N. Y., Theological Seminary. He remained there until 1912, when he was called to the pulpit of the Fifth Avenue Baptist Church, of New York, now the Park Avenue Baptist Church. He remained in the pastorate actively until 1926, when he became pastor emeritus. As pastor of the church attended by John D. Rockefeller, Sr. and John D. Rockefeller, Jr., he was associated with them in their philanthropies. He was a leader of the "modernists" in his church. He received the degree of D.D. from Rutgers, Rochester, Colgate, and New York universities, that of Litt.D. from Franklin and Marshall University and that of LL.D. from Denison University. He was a trustee of Rochester Theological Seminary, a member of the council of New York University, and a director of the Union Theological Seminary. In 1911 he was president of the American Baptist Foreign Missionary Society. In 1899 Dr. Woelfkin published *Chambers of the Soul*.

WOMAN'S CHRISTIAN TEMPERANCE UNION. An all-partisan and all-sectarian movement which has as its purpose the protection of the home by the abolition of the liquor traffic. The Union comprises 10,000 local unions with a membership of approximately 600,000 and is organized in every State, territory, and dependency of the United States, including the District of Columbia, Alaska, Hawaii, Porto Rico, and the Philippines. The Young People's Branch for both young men and women who are united for temperance and prohibition and the Loyal Temperance Legion for children are under its supervision. The official organ of the Union is *The Union Signal*; *The Young Crusader* is published for boys and girls. The officers for 1928 were: President, Mrs. Ella A. Boole; vice president-at-large, Mrs. Ida B. Wise Smith; corresponding secretary, Mrs. Anna Marden DeYo; recording secretary, Mrs. Sara H. Hoge; assistant recording secretary, Mrs. Nelle G. Burger; and treasurer, Mrs. Margaret C. Munns. The main headquarters are at Evanston, Ill.; the legislative headquarters are at the Hotel Driscoll, Washington, D. C. See PROHIBITION.

WOMEN IN INDUSTRY. The YEAR BOOK has printed the progress of legislation in the United States in the interests of women engaged in industry. There have been recounted here the efforts to restrict the hours of labor of women, to obtain for them the benefits of a minimum wage, to prohibit night work, etc. How salutary has this type of legislation been? More specifically, has protective legislation interfered with the ability of women to obtain employment particularly in competition with men? The United States Women's Bureau, in 1928, applied itself to the answering of this important question and, as a result of a study made in a group of industries in a number of States, found that protective legislation for

women was regarded with favor rather than otherwise. In other words, women were being helped in their employment by special legislation.

The following five industries were studied: boots and shoes, hosiery, paper boxes, electrical products, and clothing. A total of 1661 establishments in 179 towns in 11 States employing 665,000 workers was examined. This was the conclusion that the Bureau reached with regard to the effect of a shorter day for women on their possibilities for employment:

The general attitude of the present-day manager in industry . . . shows that the adoption of the shorter-day standard is an almost universal development. . . . The enforced or voluntary shortening of hours for women seems to have brought with it in most instances a similar decrease for men. But whether or not they have been shared by men, there is absolutely no indication in any of the establishments studied that the shorter hour schedules have been in any way a handicap for women.

The best test of the problem was in Massachusetts where the law prescribes a 9-hour day and a 48-hour week. Here, 82 establishments reported that they would have liked a longer working day for women but a complete count showed that women were debarr'd from only 500 jobs—less than one-half of 1 per cent—because of the shorter working day. The Bureau found the same state of affairs with regard to the effect of night work on jobs for women. The following States do not prohibit night work: New Hampshire, Rhode Island, Ohio, Illinois. On the other hand, Wisconsin, New York, Massachusetts, and Indiana do. But the prohibition had nothing to do with the obtaining of jobs. The Bureau found a general prejudice among managers toward the employment of women at night, law or no law. Ohio, for example, has no such law. Yet out of a total of 409,970 working women in that State, only 2695 women were found to be night workers. What was true of factories was equally the case in stores. A total of 54 stores in Massachusetts and California (where there were hour laws) and in Indiana (where there was none) was studied. Nowhere had the hour law on the statute books led to the hiring of men instead of women. The same was true in restaurants. The surveyors studied 198 restaurants where 2537 men and 2361 women were employed in the following States: California (which has an hour law but allows night work), New York (which has an hour law and does not allow night work) and Illinois (which had practically no prohibitions on either score). In really few cases were men employed instead of women because of restrictive legislation. Where men were given preference, the reasons lay outside the law, i.e., that high-class service in restaurants demanded men, that men should be given first chance at the jobs where the tips were higher, etc.

The Bureau found, in the cases of these industries where women were dropped out, that the reasons were not because of restrictive legislation but because the women were fundamentally unsuited for the jobs. This was true of women car conductors, taxi drivers, metal workers, etc. There is no question, of course, that, in certain particular types of employment, losses of jobs were due to the passage of restrictive legislation, e.g., when women were discharged from their positions as subway ticket sellers because they could not work at night. The con-

clusion is plain here: that one should not expect blanket legislation to be successful in every particular. Nevertheless, this study has demonstrated beyond doubt that restrictive legislation limiting hours of work and prohibiting night work has not prevented women from getting jobs.

PROTECTIVE LEGISLATION. The Women's Bureau, in a survey published during the year, pointed out the total lack of general standards prevailing among the States with regard to the conditions affecting the employment of women. With regard to hours of employment, while 43 States had laws limiting the number of hours, only 10 specified an 8-hour day while the range runs up to 11 hours and in one case to 12 hours. The report pointed out that in many States, because the industries in which restrictions are set are enumerated, very few of the total number of women working are affected. It is significant to set down, however, that in a few States, notably New York, Massachusetts, and Pennsylvania, the codes are very liberal and apply to practically all women engaged in industry. The existence of industrial commissions helps in the extension of laws for the protection of women.

It is significant to note that the United States Supreme Court's finding that the District of Columbia minimum-wage law was unconstitutional had not affected the status of similar legislation in the States of South Dakota, Utah, California, Colorado, Massachusetts, North Dakota, Oregon, Washington, and Wisconsin. The first two had minimum-wage laws in enumerated industries; in the others, there were commissions which have the right to study particular industries for the purpose of setting minimum rates. The fact is, these commissions have functioned in all the States but Colorado. In all the other States but Massachusetts, the findings of the commission are mandatory, while in Massachusetts, as has been pointed out in previous *YEAR BOOKS*, a powerful public opinion evoked through the posting of the names of recalcitrant employers in the newspapers in effect brings about the same result. Nevertheless, the highest rate ever set had been that of the California commission which had fixed a weekly wage of \$16 for all industries. In Utah, the rate fixed had been only \$7.50. By implication, the Bureau's report finds wage fixing by law unsatisfactory for it says: "Where the rates are set by law, they have not responded to the great rise in the cost of living since 1914."

WOMEN'S PARTY IN THE ELECTION CAMPAIGN. One of the real anachronisms of modern times was the work of the National Women's party, which was so jealous for the equal place of women before the law that it was actively waging war on the presence, in State codes, of all laws giving women special protection in industry. Early in the presidential campaign, it elicited a statement from Secretary Hoover that he was in favor, in principle, of the National Amendment the National Women's party was sponsoring. On September 12, therefore, the party endorsed the candidacy of Mr. Hoover. In October, however, Mr. Hoover told the Women's Trade Union League that any change in the existing laws regulating the conduct of women in industry was deplorable. The result was the defection of a number of leaders of the Women's party who announced that they were supporting Governor Smith. It must be

declared, however, that Governor Smith gave these ladies small comfort, for in his speech of October 31, delivered at Newark, he said: "When it comes to woman's legal status, when it comes to the custody of children, when it comes to property rights, I will go as far as anybody in the world to maintain the equality between men and women. But what I will never do is consent to the passage of an amendment to the Federal Constitution that will prohibit the States from enacting legislation to promote the health, the comfort, and the happiness of women who are compelled to work in factories." The National Women's party, ambiguity on the part of its favorite candidate or not and defections notwithstanding, decided to make the best of a bad bargain and on October 31, it reiterated its support of Secretary Hoover.

HOME WORK. The Department of Labor, in a study made of a group of 623 families residing in certain industrial sections of the State of New Jersey, reported that 85 per cent of all the mothers in these families were working at home. Almost all the families were foreign-born. Two-thirds of the families declared that the work had originally been undertaken to supplement the family income, rendered inadequate because of the unemployment of the chief breadwinner. A large number of the mothers thus engaged were working from five to eight hours daily in addition to performing their home tasks and taking care of their children. Of the 334 families that kept track of yearly earnings as a result of the work of the mother (and, it should be said, of many of the children as well), fully half reported that the total family earning in this extra industrial activity had not been \$100 for 12 months. This industrial home work was largely on men's and women's clothing coming from New York and Philadelphia manufacturers. Other types of employment included work on powder puffs, packing Christmas cards, stringing tags, carding buttons and safety pins.

RUSSIA. Dr. George M. Price, in his *Labor Protection in Soviet Russia* (1928), points out that all industrial workers have the following privileges with respect to hours and rest periods: an 8-hour working day; a reduced labor day in especially hazardous industries; reduced hours for night workers; limitation of overtime; a rest period of 42 consecutive hours every week; annual vacations with full pay are allowed, industrial workers getting two weeks and office workers and those employed in hazardous trades, four weeks. Women in industry in addition to the above benefits are entitled to these special considerations: they may not work in the following hazardous trades: mining, work with rubber, benzol, trinitrotoluol, in foundries, gas scrubbers, in lead, copper, mercury, zinc, silver, and other mines, in foundries, gas scrubbers, in lead, copper, mercury, zinc, silver, and other mines, in smithies, lumber work, etc.; they may not work from 10 P.M. to 6 A.M.; they may not work at occupations where they must lift more than 10 pounds. Women under 18 and pregnant and nursing mothers come in for additional benefits.

RUMANIA. In April, a complete labor code was enacted in this country for the protection of women and children in industry. The working day was fixed at 8 hours and the working week at 48 hours in the following industries: mines and quarries, manufacturing, transport.

A commission was appointed to draw up the details of the code with particular reference to the draft conventions of the League of Nations that the country had ratified. The ministry of labor was to take under consideration the reduction of hours in hazardous industries.

JUGO-SLAVIA. A recent labor code in this country provided for the elimination of night work for women and for children under 18; the employment of pregnant women two months before their confinement and for two months following was prohibited; and women with nursing children were to be allowed time off for nursing in nurseries provided by the management.

WOMEN IN SPORT. See **ATHLETICS**.

WOMEN'S CLUBS. **GENERAL FEDERATION OF.** An organization founded in 1889 and chartered by Act of Congress Mar. 3, 1901. It is composed of local clubs in the United States and other countries and its purpose is the enrichment of community life. In addition to local clubs there were, in 1928, 14 national organizations and 64 clubs outside of the United States affiliated with the Federation. It is governed by a board of directors, including representatives from every State, and the work is divided into eight departments: American citizenship; American homes; education; fine arts; international relations; legislation; press and publicity; and public welfare. Activities outside the departments include: extension of the Federation by the organization of rural clubs and junior groups; work for the improvement of motion-picture films and radio programmes; coöperation with war veterans; medical scholarship loan; and exchange Pan-American scholarship. The official publication is the *General Federation News*. Headquarters are at 1734 N Street, N. W., Washington, D. C. Mrs. John F. Sippel was president, and Miss Josephine Judkin, manager of the research and club service.

WOOD, JAMES J. American engineer and inventor, died at Asheville, N. C., April 19. He was born at Kinsale, Ireland, Mar. 25, 1856, and was taken to the United States when he was eight. He was graduated from the Brooklyn Polytechnic Institute in 1878 as a draftsman and mechanical engineer. He had begun to work at eleven, in the employ of the Bradford (Conn.) Lock Company. He early displayed an interest in the problems of arc lighting, and in 1879 designed an arc-light dynamo so efficient that it caused the Fuller Electric Company, which was exploiting the inventions of James B. Fuller, to substitute Wood's machine for Fuller's and to change its name to the Fuller-Wood Company. He was with the company from 1880 to 1885, and from the latter year until his death he was with the Thomson-Houston and General Electric Companies as inventor and consulting engineer. He was the consulting engineer of the Fort Wayne, Ind., works of the General Electric Company. He held 240 patents covering electric and mechanical devices. He designed the dynamo used for flood-lighting the Statue of Liberty in New York Harbor. His name was often associated with those of Thomas A. Edison, Elihu Thomson, and Charles F. Brush, other pioneers in the invention and use of electrical machinery.

WOOD PULP. See **FORESTRY; PAPER**.

WOODROW WILSON AWARD. This honor for distinguished service in furthering good will between nations was conferred, March 19,

upon Col. Charles A. Lindbergh, the distinguished aviator. The first award made by the Woodrow Wilson Foundation was to Viscount Cecil in 1924; the second to Elihu Root in 1926. No award was made in 1927 and the one to Colonel Lindbergh was the third.

WOOL. The high degree of prosperity of the sheep industry in the United States continued in 1928. Demand for wool improved during the year. The number of sheep was 23 per cent greater than at the 1922 low point. The number shorn in 1928 was estimated at 38,364,000, compared with 36,570,000 in 1927. The revised estimate of the U. S. Department of Agriculture for wool shorn in 1928 was 299,113,000 pounds, an increase of 6.1 per cent over the preceding year, due both to an increased number of sheep shorn and a small increase in the average weight of fleece. Texas led all the other States, followed closely by Montana, Wyoming, California, Utah, and Oregon in the order named. The production of pulled wool was 51,900,000 pounds, compared with 50,100,000 pounds in 1927.

The world's wool crop for 1928 outside of Russia and China was expected to be somewhat larger than that of 1927, and about equal to, or a little larger than, the clip of 1926. The number of sheep in the world was increasing, although in several European countries, notably France and Germany, the upward tendency seemed to have been checked. A large share of the increase was in the United States, Canada, and the United Kingdom. In Australia the number declined owing to drought, but subsequent improvement in range and pasture conditions in that country enabled the wool production to be well maintained.

With but little prospect of further expansion of wool production in New Zealand, Australia, and South Africa, there was believed to be opportunity for American wool-growers to place their industry on the best financial basis in its history. This opportunity was believed to lie in breeding sheep which would produce a type of wool the mills demand, maintenance of uniformity from one year to another, and preparation and marketing with the same efficiency that prevails in Australia, New Zealand, and South Africa.

A nation-wide wool pool was planned during the year to handle the crop in 1929. The National Wool Growers' Association approved the recommendation of the wool marketing committee which had been working on a plan for such a pool to handle 50,000,000 to 75,000,000 pounds in 1929, or about one-quarter of the American output. Existing State coöperative and other marketing agencies would be used and others created where lacking. One estimated advantage would be elimination of competition between coöperative selling organizations, placing the central organization in a more advantageous position in trading, and others would come from grading, efficient marketing, etc. A wool institute was inaugurated, with headquarters in New York, patterned largely after the Cotton Textile Institute.

The International Wool Conference met in Paris in November, and appointed a committee to establish an international wool products association, following the example of other large industries. The conference was composed of Great Britain, France, Germany, Italy, Belgium, Holland, and Czechoslovakia. Other wool-producing and wool-handling nations were to be invited to

associate themselves with the international body. The United States was represented at the conference by delegates.

WORCESTER MUSEUM. See ART MUSEUMS.
WORCESTER POLYTECHNIC INSTITUTE. A non-sectarian institution for the technical education of men at Worcester, Mass., founded in 1865. The enrollment for the autumn of 1928 totaled 602, distributed as follows: Mechanical engineering, 133; civil engineering, 81; electrical engineering, 158; chemistry, 55; general science, 1; physics, 1; and freshmen, 173, all of whom take the same course of study. The faculty numbered 68. The productive funds of the Institute amounted to \$2,734,000 and the income for the year to \$314,600. There were 23,000 volumes in the library. President. Ralph Earle, D.Sc., D.Eng., Captain, U. S. N. (Retired).

WORKMEN'S COMPENSATION. In an address delivered before the New York Industrial Safety Congress and Exhibit late in 1927, Ethelbert Stewart, United States Commissioner of Labor Statistics, pointed out that there were a number of serious problems still to be settled in the field of workmen's compensation. There were in operation three forms of insurance, viz., self-insurance, insurance by private companies, and State insurance funds whether competitive or monopolistic. The large employers of labor (these comprise only 2 per cent of the total number of establishments) are self-insurers; another small group has solved its problem by means of mutual companies; while the great majority of plants use private stock companies or the State funds. One of the difficulties of the situation lies in the high accident rate among the small plants with the result that this type of business is unprofitable. For example, in New York State, during the years 1924 and 1925, 25 per cent of the firms insured were paying the minimum rate and for this group the premiums earned totaled 2.14 per cent of all the earned premiums, while the losses sustained were 2.15 per cent of the total losses or 61.8 per cent of the earned premium. Among the group of small plants paying between \$25 and \$50 premium, the losses were 89.8 per cent of the earned premiums. On the other hand, for the plants paying \$30,000 and over in insurance premiums, the total premium earned made up 9.2 per cent of all the premiums against a loss of 7.85 per cent of the losses with a percentage of 52.4 of the premium earned. The result was the increase of prohibited risks on the part of the private stock companies. Some States met the situation by making all risks compulsory, e.g., Arizona and Utah. In other States, where the State funds were on a competitive basis, the small and unprofitable risks had fallen to the State funds with the result that in time the State funds may have to be supported from general taxation.

Mr. Stewart's conclusions were significant; he found that the most profitable risks, i.e., those of the large establishments, are being covered by self-insurance or, what is the same thing, mutual companies; that the high rates that the private companies must charge because they are carrying the greater number of unprofitable risks become prohibitive and end in the elimination of the risks that cannot pay or whose accident rates are high; the result being "a scheme that defeats itself and which in turn reacts upon the operation of the compensation

laws so as partially to defeat them, thus throwing back upon the workers and the community the evils, within this group, for which the compensation laws were enacted. . . ."

COMPENSATION AND WIDOWHOOD. A study in Wisconsin of the remarriage of widows with children, particularly of those rendered widows as a result of industrial accidents, indicated very plainly that, had it not been for workmen's compensation legislation, these families would have become public charges. The study covered the period July 1, 1923, to May 1, 1927, the period of the State's compensation history. The survey found that the remarriage rate was highest during the first year of widowhood, that remarriage directly depends upon the age of the widow and the number of children and that more lump-sum settlements were made proportionately with widows that remarried than with those who did not. The study found only two cases out of 32 remarriages of widows (with children) who were over 37 years of age at the time of their husbands' deaths. Of the 182 widows studied, only 32 were remarried; of the latter, 18 were under 30 years at the time of the death of the husbands. The median age of the remarried widows, at the death of the husbands, was 29 years; the median age of the unmarried widows, at the death of the husbands, was 37 years. The median age of the whole group at the death of the husband and breadwinner was 35 years, an interesting example of the type of family being aided by workmen's compensation legislation.

STATE INSURANCE FUNDS. In previous issues of this YEAR BOOK there have been included discussions of the success of the various insurance funds being operated by the States. There follow here similar data for a number of States: In *New York*, in the calendar year 1927, the State fund wrote premiums to the total of \$7,088,628, an increase of \$138,856 over the previous year. For 1927 the number of policyholders totaled 21,047, an increase of 3586. Since 1922 the State fund's earned premiums have shown greater increases proportionately than the movement of factory payrolls for the same period. For 1927 the *Ohio* State fund reported total assets of \$55,235,467 of which \$46,515,351 was being held as a claim reserve to cover awards on which payment is required over a period of years. During the year, the receipts of the fund made up of earned premiums and interest on the claim reserve totaled \$15,457,320 and the disbursements were \$13,358,270. During the year, premiums were reduced in 25 per cent of the classifications and increased in 22 per cent. It is interesting to note that this State fund uses a system for giving merit ratings, with savings in premiums to employers, based on the number of accidents occurring in their plants.

The following was the condition of the *Pennsylvania* State fund at the conclusion of the year 1927: Gross assets totaled \$8,322,126.72 of which \$4,569,704.24 was reserved for claims, \$1,000,000 was reserved for a catastrophe, and \$2,069,573.13 represented a surplus. The earned premiums for 1927 had come to \$3,700,000, the largest premium income in the history of the State fund. The State fund was established in 1916 and during the 12 years of its existence policyholders paid into the fund \$29,847,966 of which amount \$3,708,594 was returned as divi-

dends, \$500,000 was returned to the State Treasury, and \$15,462,464 was paid out as compensation to workmen and their families. The State fund was not compulsory and its rates were the same as those used by the private companies. However, during 1916-27, the State fund granted 10 per cent reductions from the announced rates. On Jan. 1, 1928, however, the fund officials were advised that it would have to use the same rates as the private companies, but this merely meant that the initial reduction would be converted into a larger dividend.

LEGISLATION. On May 14 the United States Congress enacted a workmen's compensation law for persons employed in private establishments in the *District of Columbia*. This action left only the following States where workers are not protected against industrial accident: Arkansas, Florida, Mississippi, North Carolina, and South Carolina. The District of Columbia's law was modeled on the Federal Longshoremen's Compensation Act (described in the 1927 YEAR BOOK) in that its chief features permitted private insurance companies to write competitive insurance and in that it provided for administration under the U. S. Employees Compensation Commission. Among the States whose legislatures met in 1928, important action for the strengthening of workmen's compensation acts was taken in two. In *New Jersey* amendments were passed raising the \$17 weekly maximum payment to \$20 and increasing the minimum to \$10. Larger benefits were provided for the loss of an arm, hand, thumb, and forefinger. In *New York* the legislature passed an amendment permitting the State fund to extend its province to New York employees coming under the protection of the Federal Longshoremen's Act. Another amendment extended the benefits for compensation to employees working for organizations that were non-profit making. A third amendment provided protection for those injured fatally or otherwise by "direct contact with" a limited number of occupational diseases. Critics did not consider this adequate in the face of the absence of an all-inclusive disease list.

FEDERAL WORKMEN'S COMPENSATION ACT FOR HARBOR WORKERS. The YEAR BOOK for 1927 reported the passage of an act by Congress for the extension of the benefits of workmen's compensation to longshoremen and harbor workers. The act, which was administered by the U. S. Employees' Compensation Commission, met with remarkably little opposition and in the first year of its operation, July 1, 1927, to July 1, 1928, few cases found their way into the courts. The work of the commission was facilitated greatly by the action of two of the most important mari-

longshoreman sued for damages on the ground that the Compensation Act took away his property rights without due process. The Court of Appeals affirmed the lower court's decision that the injured workman's sole remedy was under the Federal law. An amendment to the act was passed by Congress in May authorizing Federal district attorneys to appear as counsel for the commission when it was named as a party in suits involving the law. The *Monthly Labor Review* said of the act in the first year of its operation: "The United States Longshoremen's and Harbor Workers' Compensation Act has been administered during the first year with great foresight and with active coöperation of all parties, with an absence of that spirit that breeds litigation, and with a liberal interpretation acceptable to those concerned."

PHILIPPINE ISLANDS. On June 10 there went into effect the Workmen's Compensation Act that had been passed during the previous year. Its provisions, as analyzed by the *Monthly Labor Review*, are as follows: *Injuries*, all injuries caused by employment, or illness directly caused by employment; *Industries*, all those exercised for gain except agriculture, charitable institutions, and domestic service; *Persons compensated*, all those who receive less than 42 pesos a week and all public employees except those who are elected or who receive more than 800 pesos a year (the peso is worth 50 cents); *Compensation for death*, burial expenses not to exceed 100 pesos, 45 per cent of average weekly wages to dependent widow with additional allowances for children, payments to widow to cease with death or remarriage, payments to children only up to the age of 18, no payment for more than 208 weeks, aggregate compensation not to exceed 3000 pesos; *Disability*, for total disability, compensation not to exceed 3000 pesos in all, for partial disability, the maximum is the same and the maximum weekly allowance is 10 pesos, payments in lump sums are allowed; the employer is not compelled to insure. It will be observed that the maxima are very low, that lump-sum payments are permitted, and that insurance is not compulsory. In these particulars the law is not up to standard.

GREAT BRITAIN. The accompanying table, prepared by the British Home Office, presents the number of accidents that have occurred in the past few years in these industries: mines, quarries, docks, railways, factories, construction work, shipping. In 1925 the total number of persons employed was 7,541,014; in 1926 the figure was 7,001,795. The small number of cases occurring in 1926 is to be attributed to the coal strike.

NUMBER OF COMPENSATED CASES OF INDUSTRIAL ACCIDENTS IN GREAT BRITAIN AND PAYMENTS FOR COMPENSATION, 1919 TO 1926

Year	Number of cases			Payments for compensation		
	Fatal	Nonfatal	Total	Fatal	Nonfatal	Total
1919	3,293	365,176	368,469	£687,477	£3,929,246	£4,616,723
1920	3,531	381,986	385,517	755,517	5,222,352	5,978,009
1921	2,385	283,861	286,246	518,064	4,991,331	5,509,395
1922	2,489	390,428	392,917	546,889	5,948,839	6,495,728
1923	2,657	477,878	480,035	591,164	6,542,932	7,134,096
1924	2,878	437,442	440,320	786,444	5,888,594	6,675,038
1925	3,030	473,055	476,085	864,726	5,778,204	6,642,930
1926	2,345	368,563	370,908	674,611	5,382,310	6,056,921

time States, namely, California and New York, which passed laws for the greater coöperation of State agencies with the Commission. The law's constitutionality was tested in a case before the New York Court of Appeals where an injured

INDUSTRIAL ACCIDENTS. It is important to remember that the passage of workmen's-compensation acts has helped materially in the decrease of dependency. This is brought out clearly in the examination of any table showing the total in-

jured by our industrial society and the amount of compensation necessary to keep alive the families of the injured workers. The following table gives the compensation history of New York State for the two years ending June 30, 1926:

COMPENSATION IN NEW YORK STATE FOR TWO YEARS, ENDING JUNE 30, 1926

Cause	Death or permanent total disability	Permanent partial disability	Temporary disability	Total weeks of disability	Total compensation
Machinery	113	8,717	15,118	591,762	\$ 8,842,691
Hoisting and conveying apparatus	285	1,525	3,201	347,660	3,369,627
Vehicles	508	3,102	12,067	763,107	7,495,851
Explosions, electricity, fire, etc.	268	731	6,841	345,500	3,014,742
Harmful substances	60	222	2,290	90,764	959,979
Falls of persons	534	4,984	26,410	1,089,401	12,919,164
Stepping on or striking against objects ..	33	582	6,751	85,455	1,057,327
Falling objects	188	2,044	9,643	337,665	4,009,609
Handling objects	178	6,844	40,533	627,494	8,779,379
Hand tools	34	2,821	10,800	205,031	3,258,214
Animals	28	229	1,286	52,054	552,919
All other causes	124	1,526	6,819	229,598	2,590,700
Total	2,303	33,327	140,259	4,765,491	\$56,850,202

In order that the reader may obtain an idea of the industrial accidents for which workmen's compensation legislation provides, there is appended here a table showing the kinds of accidents met with in New York State in the fiscal year ending June 30, 1927. Of the total of 98,984 accidents, 1042 ended fatally, 41 were permanent total disability cases, 18,518 were permanent partial disability cases, while the remainder were cases of temporary injuries.

NUMBER OF COMPENSATED ACCIDENTS, COMPENSATION PAID, AND TIME LOST, IN NEW YORK STATE, YEAR ENDING JUNE 30, 1927, BY CAUSE

Cause	Number of cases	Time loss (weeks)	Average weeks lost per case	Compensation paid	Average amount paid per case
Handling objects	27,692	322,648	11.7	\$4,643,260	\$167.68
Falls	18,092	535,411	29.6	6,515,137	360.11
Machinery	18,026	289,001	22.2	4,411,144	338.64
Vehicles	8,897	362,902	40.8	3,809,666	428.20
Hand tools	7,500	107,809	14.4	1,624,835	216.64
Falling objects	6,241	162,795	26.1	1,875,312	300.48
Stepping on or striking against objects ..	4,923	38,975	7.9	521,487	105.93
Explosions, electricity, heat, etc.	3,777	165,775	43.9	1,435,749	380.13
Hoisting and conveying apparatus	2,959	175,899	59.4	1,817,187	614.12
Miscellaneous	2,591	67,929	26.2	794,284	306.55
Harmful substances	1,338	32,816	24.5	358,826	268.18
Indefinite history of accidents	1,257	18,040	14.4	171,952	136.80
Animals	691	18,492	26.8	207,164	299.80
Total	98,984	2,298,492	23.2	\$28,186,003	\$284.75

The above items certainly have called attention to the fact that industrial accidents have not been eliminated despite the fact that industry has been made to pay the bill through the agency of workmen's-compensation legislation. At the annual safety congress of the National Safety Council, held in New York October 4, it was pointed out that industrial accidents were costing the manufacturers themselves five billion dollars annually. Eighty-five per cent of all industrial accidents was preventable if proper safety rules were enforced and 10 per cent was due to improper physical conditions in the plants. See INSURANCE.

WORKS, JOHN DOWNEY. American lawyer, jurist, and legislator, former United States Senator from California, died at Los Angeles, Calif., June 6. He was born in Ohio County, Indiana, Mar. 29, 1847. He received a public-school education and when quite young enlisted in the Union Army in the Civil War, serving eighteen months. He became a practicing lawyer in Indiana in 1868, being at Vevay until 1883, when he removed to California. He had been elected as a

Republican to the Indiana House of Representatives in 1879. His first office in California was that of judge of the Superior Court of San Diego County, 1886-87; from 1888 to 1891 he sat on the bench of the State Supreme Court, and in

1910 he was for a short time president of the City Council of Los Angeles. He was closely identified with the efforts to obtain irrigation for the State, and was also a leader in the clean-up campaign in the State and in the elimination of race-track gambling. He opposed "machine" politics and the Southern Pacific Railway. He had won a reputation as an advocate of social justice and as an independent and progressive Republican when he was elected United States Senator in

1911. As Senator, he often coöperated with the Democrats. He advocated a six-year presidential term, with no reelection. He served only one term in the Senate, 1911-17. He wrote several legal books, besides the following: *What's Wrong With the World?* (1922); *Man's Duty to Man* (1923); *Juridical Reform* (1924).

WORLD AGRICULTURAL CENSUS. See AGRICULTURE.

WORLD COURT. On April 26, the Hon. John Bassett Moore, one of America's leading international lawyers resigned his position as a member of the World Court. Judge Moore held the seat which was considered in League of Nations circles generally to be reserved for the United States. The judges are elected for nine-year terms by the League Council and Assembly together, and Judge Moore's place was filled at the Assembly meeting at Geneva in September, at which time Charles Evans Hughes, a former member of the U. S. Supreme Court and a former Secretary of State of the United States was chosen to succeed him. The vote in the Assembly was: Sir Abdue

Rohin (India) 1; Sir Johannes Wessels (South Africa) 1; Dr. Walter Simons (Germany) 5; Charles Evans Hughes, 41. His vote in the Council of the League was unanimous. Justice Hughes had been first nominated by 26 nations. He will hold the seat for two years, Judge Moore's unexpired term.

The reason assigned for Judge Moore's resignation was that he desired to complete a work in many volumes on international arbitration since the days of the Greeks. This resignation, after seven years of conspicuous service, was viewed not only as a great loss to the Court itself, but as raising wide problems concerning, first, the relationship of the United States to the Court, which again was brought up by Senator Gillett's resolution asking the President to continue negotiations with the other powers concerning America's membership and, second, the Court itself, which by the statute was to be reconstituted in 1930 when the nine-year terms of the original judges were to be completed. The machinery for the election of a successor being set in motion through the drawing up of a list of candidates by nomination of the various national groups of judges at the Hague Court of Arbitral Justice and the final vote was to take place at the Assembly and the Council in September, 1929.

The League Council at Lugano postponed action upon a resolution recommending that a study be made as to whether advisory opinions from the World Court might be requested by a majority vote. Unanimity was required by custom, though not by statute. Apparently, the object of the proposal was to facilitate the entrance of the United States into the Court. The clause in the Senate's fifth reservation to which the other Powers objected provided that advisory opinions should not be asked in any matter in which the United States "has or claims an interest." This had seemed to them like asking a right of veto. This requirement of unanimity would make such a right all the more effective. The requirement of only a majority would nullify American action in this respect.

There were two possible explanations of the action of the Council according to the Philadelphia *Inquirer*. One is that it is opposed to anything which would put the United States in a favored position if it entered the Court. The other is that it considers any change inopportune while diplomatic negotiations with regard to the meaning of the clause are pending.

The effort of United States Senators to bring about the rescinding of the American acceptance of membership in the World Court failed in Congress February 9, by a vote of 59 to 30. The resolution proposed that the United States withdraw its conditional acceptance of the obligation of the Statute of the Permanent Court of International Justice. The British reply on American reservations, received almost simultaneously, used the terms of rejection drawn up at the 1926 conference of states members of the World Court. France, Sweden, Holland, and India have taken similar action.

Professor Anzilotti of Italy was elected President of the World Court for the term 1928-30 succeeding Dr. Huber of Switzerland. The optional clause of the statute of the Permanent Court of International Justice was signed by Greece.

AMERICAN ADHESION TO THE WORLD COURT.
The Senate Committee on Foreign Relations, in

an executive session May 23, voted to defer action until December on the resolution of Senator Gillett, of Massachusetts (see YEAR BOOK, 1927), requesting the President to reopen negotiations looking toward acceptance of the American reservations to acceptance of the protocol of adherence to the International Court of Justice. This action was announced by Senator Borah, of Idaho, chairman of the committee. The vote in favor of deferring action on the resolution was 9 to 8. Republican members, except Senator Gillett and Senator McLean, of Connecticut, voted for postponement. Democratic members, except Senator Pittman, of Nevada, who was absent, and Senator Reed, of Missouri, voted against the motion to defer action. Before the committee agreed to postpone consideration of the resolution, Senator Gillett expressed his willingness to accept an amendment offered by Senator Walsh, of Montana, which would request the President to enter into negotiations with nation members of the League of Nations and of the World Court, to seek to have the Court render a decision as to whether a majority vote or an unanimous vote of the Council of the League is necessary to ask the Court for an advisory opinion. The vote in the Committee on the motion to defer action on the resolution was as follows: Yeas: Republicans (7), Borah, Johnson, Moses, Edge, Capper, Reed, of Pennsylvania, Fess; Democrat (1), Reed, of Missouri; Farmer-Labor (1), Shipstead. Nays: Republicans (2), McLean, Gillett; Democrats (6), Swanson, Robinson, of Arkansas, Walsh, of Montana, Harrison, Bayard, George.

It was explained that Senators Edge and Capper voted to defer action because they wished to see the resolution amended to state that its adoption would not indicate any change in the attitude of the Senate in its insistence upon the fifth reservation at the time it voted for adherence to the World Court. Senator Swanson, ranking minority member of the committee, said after the meeting that the minority, except Senator Reed, of Missouri, had voted against postponement of the resolution because they felt that an expression of the Foreign Relations Committee on the Gillett resolution would be desirable during the present session of Congress. Senator Swanson predicted that, if the Gillett resolution ever reaches a vote in the Senate, it would be adopted.

President Coolidge announced that he intended to resume negotiations in the matter of American adhesion. This intention (on legislation to come before the Short Session) was first expressed at a White House breakfast attended by a number of Republican Senators on November 24. The next day, the press reports of the breakfast generally agreed that Senators present gained the impression that completing the adherence of the United States to the Court was "a matter dear to the President's heart." As the *New York Times* headline put it, he desired to make it the "crowning act" of his administration. The President's initiative, of course, altered the importance of the Gillett resolution which had been scheduled to come up at the first meeting of the Foreign Relations Committee in December.

Pending the result of these negotiations to be undertaken by the Executive, there was naturally no action on the Gillett resolution during the closing weeks of the year. Senator Gillett had asked that it lie in Committee until the result be known. Senator Gillett's own statement of the situation was as follows:

I am delighted at the President's intention to renew negotiations with the other nations to see if some satisfactory basis cannot be agreed upon by which we shall enter the World Court. The sole object of my resolution now pending before the Foreign Relations Committee was to encourage such negotiations and now that he has expressed the desire and purpose to undertake it, I shall let my resolution lie dormant until the result of his action is determined. I presume he recognizes that now that the General Peace Treaty, which has so long engrossed the attention of the State Department, has been generally adopted and the nations have renounced war as an instrument of policy, it is important that a substitute for war shall be provided and that judicial settlement of disputes offers the best hope in that direction. I trust that his efforts will be crowned with success and that his administration will thus have taken two signal steps towards permanent peace among the nations.

Once again the Court showed its usefulness in delivering judgment in the difficult case concerning the admission of children to the German minority schools in Polish Upper Silesia. This case, which had been before the League for some time, involved important questions of minority procedure and its solution should comprise another contribution to the problem of building up a law of jurisdiction for the many racial, religious, and linguistic minorities which must necessarily be found in Europe's variegated racial make-up. This judgment was entered on April 26.

Judgment No. 13, dealing with the merits of the claim for indemnity in the Chorzow case (see previous YEAR BOOK), was handed down on September 13. An Order denouncing the treaty of Nov. 2, 1865, between China and Belgium was published on August 13. Two opinions (Nos. 15 and 16) were delivered during the year. They were with regard to the jurisdiction of the courts of Danzig and the latter interpreting the Greco-Turkish Agreement of Dec. 1, 1926.

WORLD CROPS. See AGRICULTURE.

WORLD FAIRS. See EXPOSITIONS.

WORLD LEAGUE AGAINST ALCOHOLISM. An organization originating in a conference of the Anti-Saloon League of America at Columbus, Ohio, November, 1916, and formally launched in a joint conference of the Canadian Temperance Alliance and the Anti-Saloon League. It met and adopted a constitution in June, 1919, at Washington. The charter members included representatives of sixteen national temperance organizations from twelve countries. The object of the World League is "to attain by the means of education and legislation, the total suppression throughout the world of Alcoholism, which is the poisoning of body, germ-plasm, mind, conduct, and society, produced by the consumption of alcoholic beverages."

The World League is an educational movement, which under its constitution "pledges itself to avoid affiliation with any political party as such, and to maintain an attitude of strict neutrality on all questions of public policy not directly and immediately concerned with the traffic in alcoholic beverages."

The meetings of the League are held triennially, the last one having taken place in August, 1927, at Winona Lake, Indiana. The official League membership in 1927 comprised 56 national temperance organizations from 33 of the leading countries of the world. The work of the League is carried on by executive, legal, publicity, and service departments, with offices at Westerville, Ohio; the research department is located in New York City; the Scientific Temperance Federation in Boston, Mass; the Inter-

collegiate Prohibition Association has its headquarters in the Bliss Building, Washington, D. C. Branch offices are maintained in London, England; Lausanne, Switzerland; Oslo, Norway; and Toronto, Canada. The League has four presidents: Miss Anna A. Gordon, Evanston, Ill., Dr. Robert Herod, Lausanne, Switzerland, the Rt. Hon. Leif Jones, London, England, and Dr. Howard H. Russell, Westerville, Ohio. Dr. Ernest H. Cherrington was general secretary.

WORLD PEACE FOUNDATION. See PEACE AND PEACE MOVEMENTS.

WORLD RECORDS. See ATHLETICS; OLYMPIC GAMES.

WRANGEL, PETER NICHOLAEVITCH. Russian general, died at Brussels, Belgium, April 25. He was born at St. Petersburg (now Leningrad), Aug. 5, 1873, the eldest son of a Baltic nobleman of Swedish descent. He was well educated and was trained as a mining engineer. After serving as a private in the Russian Guards for a year, he went to Siberia in practice of his profession. During the Russo-Japanese War, he was made an officer, and at the close of the war rejoined the Guards. He was an officer in the cavalry when the World War began and distinguished himself in the fighting in East Prussia in August, 1914, winning mention in dispatches and appointment as aide-de-camp of the Emperor. He rose in rank until in 1915 he commanded a Cossack regiment and later a Cossack division. He served in the War until the collapse of Russia. General Wrangel opposed the Bolshevik revolution from its beginning, and, with a volunteer army operating in the Crimea, severely defeated the Soviet forces. He was finally overwhelmed in 1920 by superior forces released for service against him when the Soviets made peace with Poland. He managed to retreat in good order and to transport his men to Turkey, Lemnos, Egypt, Bulgaria, and Jugo-Slavia while the government which he had set up in southern Russia passed away. In 1922 Wrangel had his headquarters in Jugo-Slavia. By 1926 he had given up active opposition to the Soviet régime in Russia, and he accepted employment in Belgium as a mining engineer.

WRECKS. See SAFETY AT SEA.

WRESTLING. Ed. ("Strangler") Lewis gained the undisputed possession of the world's professional wrestling championship in 1928 by winning two out of three falls from Joe Stecher in a match held at St. Louis, Mo. The professional mat game again proved unprofitable, various bouts arranged for New York and other large centres failing to attract much interest.

The Amateur Athletic Union champions for 1928 were: 112 pounds, Gordon Rosenberg, Iowa Falls High School; 123 pounds, Robert Hewitt, University of Michigan; 134 pounds, Allie R. Morrison, University of Illinois; 145 pounds, Clarence Berryman, Oklahoma A. and M. College; 158 pounds, Lloyd O. Appleton, Cornell College, Iowa; 174 pounds, Ralph Hammonds, Texas University; 191 pounds, H. L. Edwards, U. S. Naval Academy; heavyweight, Edward George, University of Michigan. Lehigh University won the Eastern intercollegiate championship, the individual winners being: 115 pounds, Hyman Josephson, Cornell; 125 pounds, Edward Wilson, Penn. State; 135 pounds, Robert Lewis, Lehigh; 145 pounds, Barwell Dodd, Yale; 158 pounds, William Graham, Princeton; 175 pounds, Arthur Lehr, Lehigh; unlimited, Glenn Stafford, Cornell.

WRONG, EDWARD MURRAY, English historian, died February 16. He was born at Toronto, Ont., Apr. 14, 1889, the son of George Mackinnon Wrong, Canadian historian and professor of history at the University of Toronto. The younger Wrong was educated at St. Andrew's College, Toronto, the University of Toronto, and Balliol College, Oxford, winning a first class in history at the last-named institution in 1913. He was made a fellow in modern history of Magdalen College, Oxford, in 1914, the first Canadian to be thus honored. In January, 1915, he won the Beit Prize for colonial history. Ill health prevented his service in the World War. From 1916 to 1919 he was vice principal of the Manchester College of Technology. In 1919 he returned to Oxford as Beit lecturer in colonial history, holding the lectureship until 1924, when he was chosen vice president of Magdalen College. In 1925 he became junior proctor. He published two books, *Charles Buller and Responsible Government* and *History of England, 1688-1815*. English critics declared that Professor Wrong's death cut short what was expected to prove a brilliant career as historian and educator.

WURTTENBERG, vurt'tēm-bērk. A constituent state of the German Republic since November 1918; formerly a kingdom of the German Empire. Area, 7530 square miles; population, according to the census of 1925, 2,580,235. Chief city, Stuttgart, with a population in 1925 of 341,461. The movement of population in 1926 was: Births, 50,419; deaths, 31,323; marriages, 18,351. The chief occupation is agriculture, about 64 per cent of the total area being under cultivation.

The chief agricultural crops with their acreage and production in 1926 were: Wheat, 204,977 acres, 98,211 tons; rye, 71,485 acres, 29,150 tons; barley, 245,752 acres, 122,857 tons; oats, 257,132 acres, 139,010 tons; potatoes, 204,392 acres, 510,540 tons; hay, 1,317,312 acres, 2,617,048 tons; vines, 26,770 acres, 943,118 gallons of wine. The estimated revenue for the year ending Mar. 31, 1928, was 142,200,000 marks; expenditure, 155,600,000 marks. Supreme power is vested in the Landtag, composed of 80 members elected for four years by universal suffrage. This body appoints the state ministry, whose president is styled State President. State President and Minister of Education in 1928, Wilhelm Bazille.

WYLIE, ELLINOR HOYT. American poet and novelist, died suddenly at New York, December 16, at the age of forty-two. Born at Rosemont, Pa., the daughter of Henry Martyn and Anne Hoyt, she attended private schools at Bryn Mawr, Pa., and at Washington, D. C. Having divorced her husband, Horace Wylie, she married William Rose Benét, Oct. 3, 1923. Moving to New York in 1919, she contributed literary reviews to various periodicals, and was, for a time, an associate editor of *Vanity Fair*. Her first book of poems, *Nets to Catch the Wind* (1921), won the Julia Ellsworth Ford Prize, and she received immediate recognition for her imaginative conceptions and precise style, being soon considered, in England and in America, one of the important modern writers. She wrote two other books of verse, *Black Amour* (1923), and *Trivial Breath* (1928). Her novels, *Jennifer Lorn* (1923); *The Venetian Glass Nephew* (1925); *The Orphan Angel* (1927); and *Mr. Hodge and Mr. Hazard* (1928) were also criticized favorably. At the time of her death, Miss Wylie had arranged for

the publication, in the spring of 1929, of another book of poems to be called *Angel and Earthly Creatures*.

WYNN-CARRINGTON, CHARLES ROBERT. See LINCOLNSHIRE, FIRST MARQUIS OF.

WYOMING. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 194,402. Estimates made as of July 1, 1928, indicated a population of 247,000. The largest city was Casper, which increased from 11,447 in 1920 to 23,288 in 1925. The capital is Cheyenne.

AGRICULTURE. The following table presents the acreage, production, and value of the principal crops in 1927 and 1928:

Crop	Year	Acreage	Prod. bu.	Value
Hay	1928	1,082,000	1,645,000 ^a	\$16,488,000
	1927	1,094,000	1,669,000 ^a	15,021,000
Wheat	1928	243,000	4,098,000	3,388,000
	1927	226,000	4,186,000	3,953,000
Oats	1928	132,000	4,092,000	1,841,000
	1927	120,000	4,320,000	1,814,000
Potatoes	1928	21,000	2,352,000	1,529,000
	1927	17,000	2,329,000	1,630,000
Barley	1928	77,000	2,310,000	1,409,000
	1927	59,000	2,006,000	1,224,000
Corn	1928	167,000	3,006,000	2,254,000
	1927	176,000	3,520,000	2,605,000

^a tons.

MINERAL PRODUCTION. The production of petroleum, the chief item of the State's mineral output, fell off in 1927, particularly in total value. There were produced 21,146,000 barrels of petroleum in 1927, as against 25,776,000 in 1926; in value, \$29,800,000 in 1927, as against \$51,020,000 in 1926. The quantity of coal mined was 6,753,656 net tons in 1927, and 6,512,288 in 1926; the value, \$18,152,000 in 1927 and \$17,827,000 in 1926. The natural gas output was 46,567,000 M cubic feet in 1926 and 45,539,000 M in 1925; in value, \$4,669,000 in 1926 and \$4,149,000 in 1925. Gasoline from natural gas was produced in 1927 to the value of \$2,879,000; in 1926, to \$3,934,000. The total value of the State's mineral products was \$78,988,066 for 1926; for 1925, \$78,754,915.

FINANCE. The State expenditures in the year ended Sept. 30, 1927, as reported by the United States Department of Commerce, were: for maintenance and operation of departments, \$5,406,591 (of which \$2,238,532 was aid to local education; for interest on debt, \$142,360; for permanent improvements, \$2,152,488; total, \$7,701,439 (of which \$2,432,313 was for highways, \$760,226 being for maintenance and \$1,672,087 for construction). Revenues were \$8,823,564. Of these, property and special taxes formed 17.7 per cent; departmental earnings and payments to the State for officials' services, 4.3 per cent; sales of licenses and taxation of gasoline, 16.6 per cent. Assessed property valuation was \$461,685,564; State taxation thereon, \$1,970,843. Net funded State debt was \$1,612,833 on Sept. 30, 1927. Almost the entire outstanding State debt was for highways.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1928, was 1988.14. There were built in 1928, 59.88 miles of additional first track.

EDUCATION. As a move toward the creation of a system for the retirement of teachers with pension, the State Teachers' Association, through a committee, prepared a report on the subject, for submission to the State Legislature when it should convene in 1929. The number of pupils in the public schools made, for the academic year

1928-29, a marked rise over that of the year previous. In 1927-28 the school population of the State (including those between the ages of 6 and 21 years) was placed at 63,841. There were enrolled in the public schools 53,148 pupils. Of these, 42,496 were in the primary schools and 10,644 in the high schools. The expenditure for the year, on public-school education, totaled \$6,128,421.56. Teachers' salaries were approximately as follows: in the rural schools \$700-\$1200; in city elementary schools, \$1125-\$1900; in high schools, \$1350-\$2700.

CHARITIES AND CORRECTIONS. The State Board of Charities and Reform, with which was included the State Board of Pardons, formed in 1928 the agency of the State for the general direction of welfare activities. The Board held authority under the constitution of 1889 and consisted of five ex-officio members, who were the Governor and four other of the chief elective officers of Wyoming. It supervised and controlled all the State's charitable, reformatory and penal institutions, eleven in number, supervised private agencies for the care of children and, as the Board of Pardons, had charge of pardon applications.

The various State institutions and the numbers of their inmates on Sept. 30, 1928, were: State Hospital, Evanston, 402; State Penitentiary, Rawlins, 295; Soldiers' and Sailors' Home, Buffalo, 28; Big Horn Hot Springs State Reserve, Thermopolis; Wyoming General Hospital, Rock Springs; State Training School, Lander, 211; Wyoming Industrial Institute, Worland, 220; Home for Dependent Children, Cheyenne, 190; Saratoga Hot Springs State Reserve, Saratoga; Girl's Industrial Institute, Sheridan, 32; Wyoming Tuberculosis Sanatorium, Basin, 15. The thermal spring reserves, while treated as State institutions, had no regular inmate populations. Blind or deaf wards of the State to the number of twenty-five and five women convicts were boarded in institutions of Colorado, Montana, Nebraska, or Utah.

POLITICAL AND OTHER EVENTS. The State public-service commission granted a certificate to an airway corporation April 5 for commercial flying within the State. The company announced the establishment of routes between Parco and Jackson and between Casper and Sheridan, Cody, Cheyenne, Dubois, and Lander. The site of the engagement of July 29, 1865, between the Connor Expedition and the Arapahoe Indians, near Sheridan, was deeded to the State. A movement was set under way to seek enactment of a State old-age pension, in the next succeeding Legislature, and to do away with the poorhouse system. Construction of a large cement manufactory near Laramie, at an expected cost of \$2,000,000, was undertaken, and a beet factory at Wheatland was projected.

ELECTION. The popular vote of the State in the presidential election of November 6 was: Hoover (Republican), 52,748; Smith (Democratic), 29,299. J. B. Kendrick, Democrat, running for reelection to the United States Senate, was nevertheless elected. V. Carter, Republican, was elected Representative-at-Large.

OFFICERS. Governor, Frank C. Emerson; Secretary of State, A. M. Clark; Treasurer, W. H. Edelman; Auditor, Vincent Carter; Superintendent of Public Instruction, Katharine A. Morton; Attorney-General, W. O. Wilson.

JUDICIARY. Supreme Court: Chief Justice,

Fred. H. Blume; Associate Justices, Ralph Kimball and W. A. Rimer, who filled the unexpired term of C. N. Porter (died Dec. 21, 1927).

WYOMING, BATTLE OF. See CELEBRATIONS.

WYOMING, UNIVERSITY OF. A State institution of higher education at Laramie, founded in 1886. It consists of a college of liberal arts, a college of agriculture, college of engineering, college of education, and a law school. The enrollment for the autumn of 1928 was 1176 classified as follows: Liberal arts, 553; agriculture and home economics, 126; engineering, 149; education, 268; law, 80. The registration for the two summer sessions of six weeks each and the supplementary six weeks' session at Buffalo totaled 1263. The teaching faculty numbered 108 in the autumn term of 1928. The income for 1927-28 was \$971,657 and the productive funds for the same period totaled \$2,074,408. The library contained 70,000 volumes. A new residence hall for men, erected at a cost of \$200,000, was occupied in 1928. President, Arthur Griswold Crane, Ph.D.

X-RAYS. See PHYSICS.

YACHTING. The yachting season of 1928 was made noteworthy by the transatlantic race from New York Harbor to Santander, Spain, with cups given by the King of Spain as the rewards. Twelve yachts, comprising two divisions, sailed from New York on June 30, July 6, and July 7. The competitors were: first division, *Aloha*, bark, owned by Arthur Curtiss James; *Guinivere*, schooner, owned by Edgar Palmer; *Atlantic*, schooner, owned by Gerard B. Lambert; *Elena*, schooner, owned by William B. Bell; *Zodiac*, schooner, owned by R. W. Johnson; *Azara*, schooner, owned by G. F. and F. Baker; *Thistle*, yacht, owned by Robert E. Tod, Second division, *Mohawk*, owned by Dudley F. Wolfe; *Nina*, owned by P. Hammond and E. Root; *Pinta*, owned by W. J. Curtis and L. Rigg; *Santa Maria*, owned by Mauro and Careaga; *Rofa*, owned by William Roos. All the second-division entries were schooners ranging from 50 to 60 feet in length. The length of the first-division fleet varied from 105 feet for the *Thistle* to 218 for the *Aloha*. Never before had such small schooners as made up the second division attempted to cross the Atlantic. Among these little boats, the *Nina* triumphed and then traveled on to Cowes where she captured the Fastnet Cup, a famous British trophy for long-distance racing. The *Pinta* and *Mohawk* each led for a time during the 3000-mile journey and the *Nina's* victory was by a narrow margin. The *Elena* proved the fleetest of the larger craft with the *Atlantic* affording the winner the strongest opposition. The *Elena's* time for 3055 miles was 17 days and the *Nina's*, 24 days. The *Rofa* became dismasted when 800 miles out of New York, but her crew was saved.

In the international six-meter competitions, Clinton H. Crane's United States entry, the *Akaba*, defeated the Norwegian *Figaro V* for the Seawanhaka Cup. The *Figaro V*, however, captured the Scandinavian Gold Cup through defeating Henry B. Plant's *Salcema*. A fleet of American boats received a severe trouncing in races against a Scottish fleet on the Clyde, the weather being too tempestuous for the lighter American craft. In the Star class, *Sparkler II*, owned by Prentice E. Edrington, won the international championship at Newport Harbor, Calif.

The New York Yacht Club cruise attracted the largest number of entries of any year since

the World War. The *Vanitie*, owned by H. P. Whitney, and the *Blackshear*, owned by Frank L. Crocker, captured the two Astor Cups. A technicality cost the *Valiant*, owned by Winthrop W. Aldrich, the King's Cup.

Gar Wood's *Miss America VII* set a new world's record for motor boats at Detroit by averaging 92.838 statute miles an hour in the preliminaries for the Harmsworth Trophy regatta. This boat later captured the trophy. Miss Marion B. Carstairs of England had challenged for the trophy with two boats, but when the contest started her craft sank.

Long-distance outboard racing featured the year's motor-boating competitions, the most important event being the 200-mile race from New York to Boston which was won by C. P. Stevens, Jr., of Albany, N. Y. In an international race in Germany, Miss Helen Hentschel of Whitestone, L. I., captured the Class B championship. See OLYMPIC GAMES.

YALE UNIVERSITY. A non-sectarian institution of higher education at New Haven, Conn., founded in 1701. The university consists of 10 schools, as follows: Undergraduate, Yale College (1701); Sheffield Scientific School (1847); graduate and professional: graduate school (1847); school of medicine (1913); divinity school (1822); school of law (1824); school of fine arts (1866); school of music (1894); school of forestry (1900); school of nursing (1923). Since 1920 the undergraduate freshman year has been under the jurisdiction of a separate dean and faculty. The enrollment for the autumn of 1928 was 5743, including 718 who were not candidates for degrees or certificates. Of those working for degrees or certificates, 649 were in the graduate school; 1630 in Yale College; 669 in the Sheffield Scientific School; 890 in the freshman year; 208 in the school of medicine; 217 in the divinity school; 318 in the school of law; 327 in the school of fine arts; 115 in the school of music; 39 in the school of forestry; and 70 in the school of nursing. There were 45 research fellows working on the various foundations. The registration for the summer session of the school of law was 73.

The faculty of the University numbered 1186, and included 222 of professorial rank, 63 associate professors, 159 assistant professors, 234 instructors, and 508 assistants. The library, including the departmental library, contained 1,902,512 volumes and pamphlets. The total endowment was \$58,024,459 and the income for the year, \$5,960,665. As a result of concerted effort on the part of graduates in 1926-27 the endowment was to be increased by gifts and pledges totaling \$20,993,918.

The completion of the Brady Memorial Laboratory in 1928 increased the laboratory facilities of the school of medicine, as did the completion of Lauder Hall, and Farnam Memorial Building on the grounds of the New Haven Hospital. Construction was begun on the Sterling law buildings, to provide lecture rooms, offices, library accommodations, and dormitory facilities for 238 men, under provisions made by the trustees of the estate of the late John W. Sterling of New York; while Charles W. Bingham Hall, a dormitory, was completed for occupancy; and the first wing of the Gallery of Fine Arts was opened in the autumn of 1928. (See ART MUSEUMS.) The Phipps Polo Field and the Charles E. Coxé Memorial (Yale Field Gymnasium) were com-

pleted during the year; new baseball stands were erected; and the Walter Camp Memorial entrance to Yale Field was dedicated in November.

Among the gifts received during the year were the following: A bequest of \$60,000, or more, under the will of Mrs. Jessie L. Ward, of Brooklyn, N. Y.; \$350,000 from Mr. and Mrs. Philip B. Stewart, of Santa Barbara, Calif.; Albert Cowles of Chicago, and Mr. and Mrs. William H. Cowles of Spokane, to establish the Alfred Cowles Foundation for the study of government, in memory of their father; an addition to the original endowment of \$11,000 for the Alexander Kohut Fellowship for research in Semitics, from the donor, Dr. George Alexander Kohut, of New York, bringing the amount up to \$20,000, under which Dr. Ettaline M. Grice was enabled to carry on her work in compiling a thesaurus of Babylonian and Assyrian cuneiform signs, until her death in 1927, after which the work was undertaken by Prof. Ferris J. Stephens.

Under the direction of Prof. Michael I. Rostovtzeff, Yale University participated in excavations at Doura, on the Euphrates, in co-operation with the French Académie des Inscriptions, and in Transjordan, where, in co-operation with the British School of Archaeology in Jerusalem, the half-buried city of Gerasa was being restored to the view of travelers in Palestine and was yielding material for exhibitions at Yale and for research work by historians and archaeologists. Scholarships at Yale were granted in the autumn of 1928 to 80 members of the student body, representing 20 States, the District of Columbia, England, and China. Exercises, including the dedication of new buildings, were held in the autumn to mark the opening of the Berkeley Divinity School formerly of Middletown, Conn., which is affiliated with Yale University, although it has no formal connection with the Yale Divinity School. President, James Rowland Angell, Ph.D., Litt.D., LL.D.

YAP. A Japanese island of the Caroline group in the Pacific, centre of administration for the western Carolines; an important wireless and cable station. Population, 7752.

YELLOW FEVER. THE AFRICAN OUTBREAK. The situation in respect to this disease was not very satisfactory in 1928; for while it was dormant in the Western Hemisphere it had undergone a recrudescence in a large part of its original stamping ground on the west coast of Africa (see YEAR BOOK for 1927). There were originally two foci, in Senegal on the one hand and Dahomey, Togoland, and the Gold Coast on the other. After the death of Professor Stokes, of the Rockefeller Commission, at Lagos, in Nigeria, in 1927, the direction was taken over by Noguchi himself (see NOGUCHI, H.), who succumbed to the disease at Akkra, Gold Coast, in 1928 and this event was, in turn, succeeded by the demise from the same cause of Prof. Wm. A. Young (see YOUNG, W. A.). In the Fall of 1927, the French Colonial Government took a hand in the crusade against the disease and by December it had been suppressed throughout French West Africa, including Senegal and Nigeria. In April, 1928, a conference of French, British, and Americans was held at Dakar, in Senegal. Some doubt had been cast by certain pathologists on the spirochetic origin of the disease, based partly on important differences between the American and African types of yellow fever; and the un-

timely death of Noguchi deprived him of the opportunity of replying to his critics. He himself, however, admitted the existence of differences which extended to the microorganisms attributed to the two forms.

NEW EPIDEMIC IN BRAZIL. According to a bulletin dated July 17, 1928, quarantine officers in all ports south of Norfolk, Va., were warned against vessels clearing from Brazil where yellow fever had broken out with 87 cases and 29 deaths. Of this number, 79 of the cases and all of the deaths were reported from Rio de Janeiro, and all of the cases were reported from the coast, nothing being known as to conditions in the interior. The disease evidently represented a flare-up from an old focus and not an importation, such as might in theory have come from West Africa. The yellow-fever mosquito is abundant in southern Brazil and it is evident that some species of animal can harbor the germ of the disease in its blood and that under certain circumstances this mosquito can convey it to human beings. There is evidence that species of monkey serve as reservoirs in Africa. It is also possible that human beings themselves immune may serve as reservoirs or carriers of the disease.

NOGUCHI'S SPIROCHETE NOT THE CAUSE OF AFRICAN YELLOW FEVER. The consensus of opinion of numerous students of African Yellow Fever during the recent outbreak of the disease was that it was not due to the organism isolated and cultivated by the late Dr. Noguchi from subjects with American yellow fever and named by him *leptospira icterodes*. Investigators have gone back to the old belief that the disease is due to a filter-passing virus. It is most unfortunate for science that Noguchi was unable to go over the ground and reply to his critics who, not satisfied with their first break with his views, went so far as to insist that Noguchi's organism was identical with the *spirocheta icterohemorrhagica*, long regarded as the cause of epidemic jaundice, a disease which bears some relationship to yellow fever. The problem has now resolved itself into one of animal experimentation. The monkey known as *Macacus rhesus* is peculiarly susceptible to the disease, and the unknown filter-passing virus can be recovered from the blood or blood serum, from the liver, etc., of the infected animal. An emulsion of liver will keep indefinitely by freezing and the disease can be set up in the monkey at will and also counteracted by the use of human convalescent blood and an anti-serum prepared by injecting the virus into animals immune to the disease. Apparently, it has not yet been tested on mankind because for the time being the disease has died out.

YEMEN, IMANATE OF. See ARABIA.

YESHIVA COLLEGE. The first college of liberal arts and science in the United States under Jewish auspices, aims to afford its students a harmonious combination of secular and Jewish studies, a union of the culture and faith of Israel's age-old heritage with the culture and knowledge of the present-day world; for men only. The Rabbi Isaac Elchanan Theological Seminary (the Yeshiva) was chartered in New York, in 1896, and later absorbed the Etz Chaim Talmudic Academy, the oldest Jewish day school in the United States, chartered in 1886; and by amendment to the charter, in 1928, the Yeshiva became known as the Rabbi Isaac Elchanan Theological Seminary and Yeshiva College and was authorized to offer courses leading to the baccalaureate degrees.

The freshman year of the College began its work in the autumn of 1928, with an enrollment as follows: Senior seminary, 142; junior seminary, 235; teachers' institute, 135; college (freshman year) 31. The faculty numbered 31. The income for the year was \$142,000. The library contained 17,000 volumes and a collection of manuscripts. On Dec. 9, 1928, a group of buildings, including the main building, the auditorium, and the dormitory, with accommodations for 1500 students and 200 resident students, was dedicated at Amsterdam Avenue and 186th to 188th Street, New York. The next group to be erected provides for a new library and the Museum of Jewish Art and Archaeology. A building campaign carried on yielded over \$2,700,000 and additions were made to the endowment fund. President of the faculty, Bernard Revel.

YIDDISH. See JEWS.

YORK, EDWARD PALMER. American architect, died at New York, December 30. Born at Wells-ville, N. Y., in 1865, he attended the Cornell architectural school, 1887-89. He was then employed for eight years by McKim, Mead & White, working much of the time directly under Stanford White. He later became a member of the firm York & Sawyer, which designed a number of important New York buildings, notable for their modern geometric lines, including that of the New York Historical Society, the Guaranty Trust Company, and the Fifth Avenue Hospital. Among Mr. York's other work are buildings at Vassar, Smith, and Rutgers, Riggs National Bank, at Washington, D. C., and the Custom House and Courts Building at Honolulu, T. H. His company acted as consulting architects for the Treasury Department at Washington, 1909-13, and Mr. York's designs for the Department of Commerce Building in Washington were accepted a short time before his death. York & Sawyer were also the advisers for the Board of Water Supply of New York City.

YOUNG, THE REV. JOHN B. An American organist and reformer of church music, died at Monroe, N. Y., September 26. He was born in Alsace, Oct. 30, 1854. One year after his ordination, in 1879, he became connected with St. Francis Xavier's in New York City, and almost immediately turned his energy toward reforming the character of the music then in vogue. For the purpose of giving adequate performances of the masterpieces written in a capella style, he personally trained a boys' choir, which soon became famous. Associated with him in this noble work were three of America's greatest organists, B. O. Klein, C. Dethier, and Pietro Yon. Fortunately, Father Young lived to see his labors come to full fruition through the establishment of a worthy standard of church music in both Catholic and Protestant churches in America.

YOUNG, WILLIAM ALEXANDER. English director of medical research in West Africa, died at Accra, West Africa, in June, at the age of thirty-eight. His death was the result of yellow fever contracted in the course of an investigation of that disease that was being carried on by the Medical Research Institution of the Gold Coast, of which he was director. It followed within eight days the death of Dr. Hideyo Noguchi from the same cause; in 1927 another colleague, Dr. Adrian Stokes, also died of the disease. Dr. Young's work was done in close collaboration with that of the Rockefeller Commission in West Africa.

He was educated at Forfar Academy and University College, Dundee, Scotland (St. Andrew's University). He joined the West African Service in May, 1913, and was sent to Sierra Leone. During the World War, he served with the Cameroon Expeditionary Force, and in 1920 joined the staff of the Medical Research Institution in Nigeria. Three years later, he went to the Tsetse Fly Commission in Nigeria, and in 1924 was transferred to the Gold Coast; in the same year he was appointed head of the Medical Research Institution. See YELLOW FEVER.

YOUNG MEN'S CHRISTIAN ASSOCIATION. An educational, social, physical, and spiritual movement for men and boys found in every civilized nation of the world. This organization originated in London in 1844, then spread to the United States in 1851. The records as of June 1, 1928, showed 1,601,957 members throughout the world, 62 per cent of whom was in North America; 7396 employed officers, 73 per cent being in America; and \$242,636,000 net in Association property, of which 80 per cent was in North America. In 1928 the movement in North America involved 1616 local organizations recognized by the convention with 90,736 directors and voluntary leaders, 5475 paid officers, and a paid-up membership of 1,007,119, of whom 271,739 were boys 12 to 17 years of age. Five per cent of this body of workers and members was found in the Canadian associations and the remainder in the associations of the United States. Statistics as of June 1, 1928, showed \$226,877,900 net of property and funds paid in. Of this amount, \$24,853,800 was in endowment funds. The operating expenditures for 1928 were \$59,276,800, or more than \$1,140,000 per week. These expenditures were provided for by members and friends, the latter group contributing \$16,196,200 to the total.

The Y. M. C. A. movement involves several hundred features or lines of service. During the year ending Apr. 30, 1928, 610,402 men and boys were enrolled in its physical training and service activities, and 300,000 men and boys in its educational features, including lectures, discussions, evening schools, and regular college courses, both day and evening classes. There were 79,388 enrolled in regular courses of instruction covering from two to four years in length and of college grade, a number equal to all the male students in all the colleges and universities of the United States having an enrollment of less than 2700 each. In addition, there were numerous activities and organizations and clubs, besides the regular Sunday and devotional services and courses in Bible study, for the development of the spiritual life of the members. During the year, 208,715 students were enrolled in the Bible courses, while the total attendance at religious meetings of the Association amounted to 5,651,500. The work of the Association in the 32 foreign countries to which it had been extended was carried on by 869 local and national secretaries, partially supported by a budget of \$1,986,200 (included in total expenditures above) from the associations in North America.

The Association maintained three colleges in the United States, for the professional training of secretaries and paid officers, at Springfield, Mass., enrollment 531 students; Chicago, Ill., 309 students; and Nashville, Tenn., 110; and nine summer schools, lasting from three to four weeks each, with a total enrollment in 1928 of 1223. In

addition to hundreds of bulletins of various kinds, issued by the State and local associations, there were the following international periodicals for the North American associations: *Association Men*, monthly; *The Intercollegian*, monthly; *The Student World*, quarterly; *Physical Training*, monthly; and *The Association Forum*, quarterly. On Jan. 1, 1925, with the formation of the National Council of Canada and the National Council of the United States to supervise and promote local and State activities, the International Committee became a holding organization for the two councils, retaining, however, an active interest in the foreign work supported by the two councils. The headquarters and officers of these three organizations were as follows: The International Committee, 347 Madison Avenue, New York; James M. Speers, chairman, Dr. John R. Mott, general secretary; The National Council of the United States, 347 Madison Avenue, New York; D. W. Teachout, chairman, Dr. John R. Mott, general secretary; the National Council of Canada, 40 College St., Toronto, Ont., R. F. McWilliams, chairman, H. Balantyne, general secretary. In October, 1928, Fred W. Ramsey of Cleveland, Ohio, was chosen by the National Council to succeed Dr. John R. Mott, in 1929, as general secretary.

YOUNG WOMEN'S CHRISTIAN ASSOCIATION. An organization and movement of which the purpose is to advance the physical, social, intellectual, and spiritual interests of young women, to promote growth in Christian character and service and to be a social force for the extension of the Kingdom of God. Its national organization holds a biennial convention to which all affiliated associations send delegates. The 1928 convention was held in Sacramento, Calif., in April. The national executive organization is known as the National Board of the Young Women's Christian Associations. To it is entrusted the work of the national body during the interim of conventions.

In the United States in 1927, there were 1141 associations, of which 1001 were affiliated with the national organization. In addition to these, however, there were 900 to 1000 branches and centres. (For example, the Y. W. C. A. of the City of New York operated 18 branch centres in Manhattan and the Bronx and yet was counted as a single association in the above figures.) There were also 400 clubs of young girls in unorganized territory registered with the National Girl Reserve Department of the National Board, with an approximate membership of 22,483 girls. The total membership list in affiliated associations according to the 1927 figures was 591,574 girls and women; total expenditures by local associations for yearly current expenses totaled \$25,000,000. The value of real estate property owned by these local associations approximated \$60,000,000. Y. W. C. A. educational classes in 1927 had an enrollment of 340,064 girls, and the enrollment in clubs for recreation, study, and other activities was 273,528. In 309 Y. W. C. A. cafeterias in the United States during the same period, 28,687,948 customers were served. The number of girls and women who obtained positions through Association employment bureaus in the United States was 165,064; and the number of girls assisted in finding rooms, 136,849. The total number of girls and women who were housed in the 243 Association residences throughout the United States attained 594,765.

In the group of 48,849 women who served as board and committee members during the year, assisting in management, raising funds, and aiding professional Y. W. C. A. staffs, the Association had one of the largest bodies of women working as volunteer assistants in any organization. The national organization supervises and aids 37 Y. W. C. A. centres in 12 foreign countries and appropriates annually a large budget for the assistance of these units, in which 106 women, "American women secretaries," as the Y. W. C. A. professional workers are called, were maintained. The national organization receives its support from quota contributions from affiliated associations, the amount received from this source in 1927 being \$942,625. The remainder of the 1927 expenditures, or \$2,346,113.60, was received from gifts or from income from its \$2,571,921.22 endowment. The approximate value of the National Board's property was given as \$4,328,440. The officers of the National Board in 1928 were: Mrs. Robert S. Speer, president; Mrs. John French, chairman of the executive committee; Mrs. John H. Finley, first vice president; Mrs. John D. Rockefeller, Jr., second vice president; Miss Katharine Lambert, secretary; Mrs. Samuel Murtland, treasurer, and Mrs. George W. Davison, assistant treasurer; Miss Helen A. Davis, who was acting general secretary following the death of Miss Mabel Cratty in February 1928, became second associate general secretary late in the year, following the appointment of Miss Anna V. Rice as general secretary of the National Board of the Y. W. C. A., and of Miss Emma Hirth as her associate.

The National Board operates through the three regional offices in Chicago, Ill., Denver, Colo., and San Francisco, Calif., and its headquarters are at 600 Lexington Avenue, New York City, and adjoining is the Y. W. C. A. National School for Professional Study, at 135 East 52nd Street.

YUAN-HUNG, LI. See LI YUAN-HUNG.

YUKON, yoo'kón. A territory of the Dominion of Canada; bounded on the west by Alaska and stretching from British Columbia to the Arctic Ocean; constituted a separate political unit in 1898. Area, 207,076 square miles; population, 4157, according to the census of 1924; estimated in 1925 at 3500. The chief towns are Dawson, the capital, and White Horse. Mining is the principal occupation and the chief minerals are gold, copper, silver, lead, and coal. The output of gold in the year 1926 was valued at \$879,819 and of silver, at \$796,921. The revenue for 1927 was \$228,442 and the expenditure \$216,964. At the head of the government is a gold commissioner and a territorial council of three elected members. Gold Commissioner in 1928, Percy Reid.

ZANZIBAR. A British protectorate consisting of the island of the same name off the coast of Tanganyika in East Africa, together with the Island of Pemba and several other small islands. Area, Zanzibar, 640 square miles; Pemba, 380 square miles; population, according to the census of 1924, 216,790 (Zanzibar, 128,099; Pemba, 88,691). The total number of children attending schools in 1926 was 3407. The prevailing religion is Mohammedanism. Zanzibar, with a population in 1924 of 38,700, is one of the chief ports of Africa. The chief industry is the production of cloves, the two islands of Zanzibar and Pemba yielding the greater part of the world's supply. The exports in 1926 were 158,425 cwt., and clove-

stems, 39,550 cwt. The coconut industry ranks next in importance to cloves; the export of copra amounted to 347,080 cwt. in 1926. The value of imports in 1926 was £1,633,551; exports, £1,585,884; revenue in 1927, £544,083; expenditures in 1927, £642,292; tonnage entered and cleared in 1926, £1,238,892 net tons. The nominal head of the government is the Sultan, but the actual administration is in the hands of a British Resident, who is aided by an advisory council under the presidency of the Sultan. The Sultan's decrees are not binding unless countersigned by the British Resident. Sultan in 1928, Seyyid Khalifa bin Harab; British Resident, A. C. Hollis.

ZINC. The output of primary metallic zinc from domestic ores in the United States in 1928 according to the U. S. Bureau of Mines was about 582,100 tons and that from foreign ores was about 12,400 tons, a total of 549,500 tons, as compared with 576,960 tons from domestic ores and 15,556 tons from foreign ores, a total of 592,516 tons, in 1927. In addition to the output of primary zinc, there was an output of about 52,100 tons of redistilled secondary zinc, as compared with 42,784 tons in 1927, making a total supply of distilled and electrolytic zinc in 1928 of about 646,600 tons, composed of 238,200 tons of high-grade and intermediate, 80,100 tons of select and brass special, and 328,300 tons of prime Western zinc. Of the total output of primary zinc in 1928, 160,000 tons were electrolytic zinc produced in Montana and Idaho, 105,000 tons were made in Pennsylvania, 104,000 tons in Illinois, 103,000 tons in Oklahoma, and the remainder in Arkansas, Indiana, Kansas, Texas, and West Virginia.

The imports of slab zinc in 1928 amounted to only 3 tons. The exports of slab made from domestic and foreign ores amounted to 29,582 tons, including 4325 tons of rolled zinc. The stock of zinc reported at smelters December 31 was about 40,000 tons. The apparent consumption of primary zinc in 1928 was about 578,000 tons, as compared with 516,371 tons in 1927.

The total number of retorts at the 21 zinc smelters that operated during all or a part of the year was about 107,000. Of that number, about 63,400 were reported in operation at the end of November and about the same number was estimated in operation at the end of the year. At the end of 1927, there were 77,388 retorts in operation at these 21 plants.

Figures published by the American Metal Market gave an average quoted price of 6.03 cents a pound for prime Western zinc at St. Louis in 1928, as compared with an average selling price for all grades in 1927 of 6.4 cents. At the opening of the year, the quotation was 5.65 cents a pound and the quotation throughout December was 6.35 cents a pound. The following are the average monthly prices on prime Western zinc at St. Louis, in cents a pound:

January	5.62	July	6.20
February	5.55	August	6.25
March	5.63	September	6.25
April	5.76	October	6.25
May	6.04	November	6.27
June	6.16	December	6.35

See METALLURGY.

ZIONISM. See JEWS.

ZIWET, ALEXANDER. German-American mathematician and educator, died at Ann Arbor, Mich., November 18. He was born at Breslau,

Germany, Feb. 8, 1853, and was graduated from the Polytechnic School at Karlsruhe in 1880. He moved to the United States in the same year, and worked until 1886 on the Government Lake Survey at Detroit, and on the Coast and Geodetic Survey at Washington. He was appointed instructor of mathematics at the University of Michigan in 1888, becoming acting assistant professor in 1890, assistant professor in 1891, junior professor in 1896, and professor in 1905. He retired in 1925, having been successively at the head of both the modern language and the engineering and mathematical departments. Professor Ziwet translated into German the Russian, I. Somoff's, *Theoretische Mechanik*, 2 vols. (Leipzig, 1878-79). He became editor of the *Bulletin of the American Mathematical Society* in 1892, and he wrote the following books: *An Elementary Treatise on Theoretical Mechanics*, part i; *Kinematics*, part ii (1893); *Introduction to Dynamics, Statics*, part iii (1893); and *Kinetics* (1894, revised 1904).

ZONING. See CITY AND REGIONAL PLANNING.

ZOOLOGY. The British Association for the Advancement of Science met in Glasgow, Sept. 6 to 13. As reported in *Nature*, no zoological programme was arranged. The American Society of Zoologists met at New York City, in affiliation with the American Association for the Advancement of Science, December 27 to 29, and the American Society of Naturalists met at the same place on December 29, for the annual symposium on "The Neuromuscular System." The Fourth International Congress of Entomology was held at Cornell University, Ithaca, N. Y., August 12 to 18, with Dr. L. O. Howard as president. The Thirty-second meeting of the German Society of Zoologists was held at Munich, May 29 to 31.

Darwin's cottage at Down, announced earlier (see YEAR BOOK for 1927), as acquired for a national memorial, was to be furnished as nearly as possible as it was when occupied by Darwin, and the library is to contain editions of all of his works. It was to be open to the public, without charge, six days in the week.

EXPERIMENTAL WORK. Huxley (*Am. Nat.* 62, p. 363) found in the results of experiments on echinoderm larvæ, corroboration of his theory that the dedifferentiation of the larval tissue is a stimulus leading to the process of metamorphosis into the adult form. The larval tissues are, so to speak, antagonistic to the adult, and the latter develop slowly in the presence of the former. Larvæ forced to dedifferentiate by the use of $HgCl_2$ metamorphosed much more rapidly than did the controls. It is generally held that secondary sex characters and sex behavior develop under the stimulus of hormones sent out by the growing sex cells. Avel (*Comptes Rendus*, 187, p. 67) found that in the earth worms, *Allobophora*, the clitellum would appear even after complete removal of all sex organs (ovary, testes, seminal vesicle, and seminal receptacles). Castreated annelids would copulate, and in some cases form cocoons in a normal fashion though these latter contained only albumen and no eggs. In this case it is obvious that secondary sex characters are entirely independent of the germ cells. Stotle (*Biol. Zent.* 48, p. 273) investigated the conditions under which hydra changes from the sexual to the asexual generation. He decided that temperature, oxygen content of the water, hydrogen ion content of the water, have no direct influence, though abundance of food is a deter-

mining factor in bringing on the sexual phase. Some effective internal metabolic force, coöperating with oxygen and temperature conditions, produce the change of phase.

Taylor (*Physiolog. Zööl.* 1, p. 1) reported that in the regeneration of a protozoön, *Uronychia*, there is the same absorption and loss of cirri, followed by their reappearance, that occurs during and after ordinary division, thus a dedifferentiation followed by a redifferentiation. He states that this follows on even minor injuries, illustrating the great degree of coördination existing between different parts of the same cell. The author follows Child in maintaining that dedifferentiation is a process of distribution of accumulated products of metabolism through the protoplasm; redifferentiation is a reforming of new materials to take their places and an elimination of the old. This process occurs during the periodic reorganization of protozoa and probably also in the mitotic division of metazoön cells.

As earlier reported (see YEAR BOOK for 1927), some very startling results were obtained in fruit flies by the use of the X-rays. Muller found that rayed flies mutate much more frequently than controls, so that although the mutations might be identical with mutations which have normally appeared in the laboratory, in some cases these mutations appeared 150 times as frequently as they had done in untreated cultures. In addition, other new mutations appeared. At the 1927 meeting of the American Association for the Advancement of Science, Curtis, in the vice presidential address before the section of zoology, called attention to such use of the X-rays as offering a new technic for the experimental analysis of living matter. Experience had shown that X-rays often exert an action upon one part of the cell and have no effect on others, thus showing a definite selective power. This is obviously the end attempted by other methods (action of chemicals, microdissection, etc.), but should, when the technic is properly perfected, be a much more delicate and reliable tool than any of the others. As an illustration, Curtis referred to his own results on regeneration in planarians. Here he found that some species have a much more rapid and complete regenerative power than do others. Microscopical study showed that in the mesenchyme of the planarian are certain peculiar cells which he calls "formative." They show little differentiation and Curtis thought that they were essentially germ cells, carrying the undifferentiated germ plasm. In planarian species which regenerate rapidly, these cells are numerous, in those with feeble regenerative powers, they are few. This led to the conclusion that they are especially concerned in regeneration. Curtis found that, if planarians are treated with X-rays, these cells disintegrate and that planarians thus treated largely lose their power to regenerate. Since none of these treated animals lived very long, the possibility remains that some essential structure other than the formative cells was affected and thus the results so far obtained are not fully conclusive. They are, however, suggestive of the possible importance of this method in experimental zoology.

Hance (*Scientific Monthly*, 27, p. 264) showed that if dark-colored mice are treated with X-rays the hair will come in white, and that this fact affords a method of determining whether the dark color is homo- or hetero-zygous. Dark

being the dominant color, the two conditions are indistinguishable to the eye. If however, the minimal amount of strength of ray that will produce any change is used, the homozygous dark hair is more resistant than the heterozygous.

As stated in earlier YEAR BOOKS, recent research in Zoölogy had developed very largely along experimental lines, Cunningham, well known as an exponent of the Lamarckian theory of evolution, discussed these tendencies in *Modern Biology* and criticizes especially the Mendelians and Biophysicists as dealing entirely with the organism as an engine in motion without any reference to the past or the future of the organism in question. He considers that in so doing, they are ignoring important problems of adaptation, recapitulation, etc. This book of Cunningham's seems to indicate the beginning of a movement back to the older morphological studies which have seemed in recent years to be of such subordinate importance.

In opposition to the pure mechanists, Conklin (*Science*, 68, p. 463) speaks of the tropism theory of all animal reactions as one of several "crude, older theories" and argues for the existence of definite ends as well as definite means in nature. "Certainly from the standpoint of life, the biologist is warranted in assuming that this is a world of teleology as well as of mechanism."

Mutations which appear in the fruit fly under laboratory conditions are, in the great majority of cases, recessive to the normal structure, and there is little evidence that a reversion to the normal ever occurs. In a few cases where this reversion has seemed to happen, it has been explained as due to other causes such as unequal crossing over and not to true changes of the genes. Hanson (*Science* 67, p. 562), working in Muller's laboratory, got results which he thought ruled out the explanation of unequal crossing over and demonstrated that a reversion to the normal may take place under experimental conditions. Male flies carrying, among other mutational characters, the "bar" eye, were subjected to X-rays and it was found that in 1 out of 433 cases this reverted to normal "round." Regarding this reversion as a true mutation, this proportion of mutations is extremely high and the chances that the reversion was caused by anything but the X-ray treatment are very few. Hanson notes that the efficient dosage producing this mutation is one that is just under that producing complete sterility. Hanson and Heys (*Science* 68, p. 115) reported on quite similar results produced in fruit flies treated with radium. These showed that radium will produce lethal mutations in fruit flies, and that the "gamma" rays alone will do the same thing. This is regarded as a step toward the analysis of just what elements in radium and X-rays are responsible for the observed results.

At the 1927 meeting of the American Association for the Advancement of Science, the \$1000 prize annually offered for the most noteworthy paper read at the meetings was awarded to Muller for the work on X-rays which was mentioned above.

EVOLUTION. Agitation against the teaching of evolution in publicly endowed institutions continued throughout the year, though the only definite legislative action was that taken in Arkansas, where at the time of the presidential election on November 6, voters were asked to vote "yes" or "no" in a referendum on the question "Shall

it be unlawful, in educational institutions supported in whole or in part by the State, to teach that man has ascended or descended, from a lower order of animals." The majority vote was in the affirmative. A high official in the public-school system of Arkansas, was later reported in the public press to have said that, because of the nature of the definitions of evolution given in them, this law rules standard dictionaries and encyclopædias out of the schools. Although laws against the teaching of evolution were in force in Tennessee and Mississippi, it was stated that, no attempt had been made, since the Scopes trial in 1925, in Tennessee, at enforcing the law. Chief Justice Greene, of Tennessee, in an address before the American Association for the Advancement of Science, at Nashville, stated that no one knows what the law really means. Of some value to the opposition was the discovery that the supposedly human tooth found in Nebraska and used by Osborn in his argument with Bryan, was really not human, and hence valueless in this connection.

Crampton had carried on a very extensive study of snails belonging to the genus *Partula*, in islands of the western and southern Pacific Ocean, securing data concerning some 400,000 individuals. One of the objects of the research was to get information bearing on the question of the method of evolution in this genus. He concluded (*Science*, 67, p. 615) that structural gradations in *Partula* are so gradual that, beginning with a species, finer and finer subdivisions can be arranged down to the smallest, which he calls the gens, "composed of all individuals that are alike in at least one distinguishable quality." He argued that we cannot understand the origin of species, genera, etc., if we study them only after they have appeared, but must concentrate on the "initial episode when they present themselves as different from their parents." "Therefore, the geneticists alone are working on the fundamental dynamics of organic differentiation," and Crampton's results entirely support the belief of the geneticists that evolution is through the accumulation of variations which owe their origin to some internal force, and are not at all dependent on external agencies. The fixing of the variations in permanent gens, etc., results through natural selection. *Partula* offers absolutely no evidence in favor of orthogenesis.

HEREDITY. (See also under *Experimental Work*.) Davenport (*Sci. Month.* 27, p. 225) reported on the results of a study of race crossing in Jamaica, this being a summary of a more extended article on this subject. Davenport found that in black-white crossings, the best of the brown show some of the highest intellectual qualities, while the worst are worse than the worst of either pure race. A population of the hybrids between black and white would contain some members having a greater musical ability than would any of the pure whites. It would be entirely possible to develop desirable qualities by controlled matings, but this would be impractical in dealing with man. Lotsy and Goddign published in *Genetica* (x, p. 131) observations on race crossing in South Africa where there have been extremely complicated and comprehensive racial crossings. They concluded that hybridization in man often results in extreme diversity but that sometimes stable complexes result. They found no evidence for mutation as the mode of

origin of human races, though new races may result from the segregation of hybrids.

Gray (*Brit. Jour. Exp. Biol.* 6, p. 26) argued that the acquisition of an outer skin which is relatively impermeable to water was essential for the evolution of terrestrial vertebrates. An aquatic amphibian, if exposed to the air, loses water very rapidly, while a terrestrial reptile does not, the difference being that in the latter there is an outer covering through which evaporation takes places with difficulty. Adaptation to a terrestrial life also involves the acquisition of an egg that can be incubated on land. The developing egg needs water which in the aquatic vertebrate is supplied from the surrounding medium. In this reptile and bird, this comes from the albumen of the egg. The mammal condition may be derived from the reptile by supposing that the aqueous solution is poured directly into the embryo instead of being collected around the egg (as albumen).

CeLENTERATES. Setchell (*Science*, 68, p. 119) agreed with earlier writers in crediting the formation of coral reefs more to the algae growing in them than to the corals, thus the term "coral reef" is largely a misnomer. Corals are really passive symbionts in the complex making up the reef. Since algae may grow to very great depths, the assumption made by Darwin that fringing, barrier, and atoll reefs are progressive stages in development due to a sinking of the ocean bottom does not necessarily hold, that assumption being based on the observation that corals have a very limited depth range. Studies on coral reefs should therefore not be based on the behavior of corals but of the calcareous algae which are their chief component. Edmondson (*Bull.* 45, Bernice P. Bishop Museum) reported on the ecology of a Hawaiian coral reef. The corals of this locality vary somewhat in their reaction to temperature but resist lowering better than raising of the temperature. Planulae will stand increased temperature changes better than will the adult animals, this possibly being due to the fact that the planulae are pelagic and swim near the surface of the water. Corals will stop feeding when the temperature gets within a few degrees of its upper or lower limit, and many species will die if deprived of sunlight.

CRUSTACEA. Owing to their habit of attaching to ship's bottoms and thus mechanically obstructing the speed of vessels, barnacles have a considerable economic importance. The larvae are free swimming and anything that would discourage their attachment to the vessel would be of distinct advantage to the shipping industry. Following experimental work on animal tropisms various suggestions have in the past been offered along these lines. Visscher and Luce (*Biol. Bull.* 54, p. 336) reported that certain colors act in a repellent fashion to the young barnacles in the "cypris" stage and that light green is the most decidedly repellent of the colors tested. The conclusion follows that ship's bottoms will be less apt to be attacked by barnacles if they are painted light green. Visscher (*Biol. Bull.* 54, p. 327) reported that the larvae of several species of barnacles which he studied orient themselves with anterior end away from the light. They attach at first, by using both antennae and legs, these organs being at first used for exploring the surroundings before being employed as holdfasts.

INSECTS. It was discovered some years ago

(see YEAR BOOK for 1925) that termites are able to digest cellulose through their symbiosis with flagellate protozoa which live in their intestines. Cleveland (*Biol. Bull.* 54, p. 231) reported on further investigations and showed that in the family *Termitidae* this symbiotic relation is generally absent, occurring in only a few species. This indicates either that these species are losing their protozoa or that they are beginning to acquire them. Cleveland was inclined to accept the former interpretation. Andrews (*Am. Nat.* 62, p. 63) stated that in the vicinity of the nests of *Formica exsectoides*, the common, mound-building ants of the eastern United States, trees are, apparently deliberately, killed by the insects. There is a considerable literature connected with this subject and some authorities have decided that the trees are killed by the ants in order to prevent undesirable shading of the nest since the colonies thrive best in open spaces. Andrews, studying these animals in Maryland, concluded that this is not the reason, since trees will be attacked which would not be in a position to shade the nest. He thinks the habit merely illustrates a general tendency of the insects to attack anything which is near the nest. The mode of attack is by biting combined with the spraying of the wood with formic acid. This habit has economic importance because, in plantations of young trees, it may cause the death of considerable numbers. Rau (*Biol. Bull.* 54, p. 503) reported the finding of drops of nectar in the nest cells of several species of the wasp, *Polistes*. This material was evidently intended as food for the young, though not in a position where the young could reach it unaided. It appears rather to be a convenient storage place where the adult wasp can easily find it when it is necessary to feed the young. Rau thought that the primitive wasps were honey feeders and that the habit of catching insects is a more recent development. Holmquist (*Physiol. Zool.* 1, p. 325) described hibernation in the mound-building ants, *Formica ulkei*. On the approach of winter, they go down deeper into the ground, mostly living at a level where the temperature is constant. Where the water level varies, they go up or down in accordance with it. The respiratory activity of hibernating ants is about one-third of that of the normal, and Holmquist was unable to find any indication of heat production in them. Their water content was lower than that of insects kept in the laboratory. Hibernation seems to be in direct response to lowered temperature and is not in any sense rhythmic. A considerable number of other insects hibernate in the upper part of the nest, when this has been vacated by the ants.

Snodgrass (*Smithsonian Misc. Coll.* 81, p. 3) published a very detailed discussion of the origin and evolution of the insect head and its appendages. He concluded that the arthropods have been derived from creeping, not swimming, animals and their immediate progenitors were annelid-like in structure. The preoral part of the embryo is the prostomium and forms the primitive head to which is later added six somites, of which the fourth, fifth, and sixth at first form a "gnathal" region, while the thorax is differentiated as a locomotor portion of the body. All of the primitive arthropod appendages were (probably) uniramous walking appendages, and the mouth parts have been derived from appendages having this structure. He considers that the biramous append-

age found in the crustacea is a secondary adaptation to a swimming mode of life.

Weyer (*Zeit. f. Wiss. Zool.* 113, p. 345) studied the germ glands in worker ants and found that they were present in all of the ants studied, and were never rudimentary, the chief differences between workers and queens being in the decided changes in the worker ovaries during the course of the life of the individual. In the worker ant, the eggs develop to the time of yolk formation in much the same fashion as in the queen, but later degenerate and are absorbed. The germ glands of *Formica fusca* and *Camponotus ligniperda* workers have undergone a change of function and have become organs of metabolism. It is probable that these changes going on in the germ glands of the workers account for the fact that they have greater vitality than the queens.

Reisinger (*Biol. Zent.* 48, p. 162) described the cataleptic condition assumed by an Indian insect, *Dixippus morosus*, which condition may be induced either by light or by mechanical stimuli, and Reisinger thinks that this has a definite protective function for the animal. If narcotized while in the cataleptic condition, the catalepsy ceases. Shannon (*Science*, 68, p. 461) records a case of abnormal food habits in moths. The observations were made in the Argentine, where moths belonging to four families and eleven species were found feeding on the eye secretions of horses. Shannon suggested that, while the region is moist and it could not be water they were after, the great scarcity of flowers in this locality might have driven the moths to seek their food in this abnormal fashion. Other flower-feeding insects in this locality feed on carrion and fecal matter, which would favor the above explanation. It is possible that the salt in the eye secretion may also be an attraction.

Many insects have mechanisms for producing sounds, and the orthodox explanation has been that these sounds have a definite significance to the insect, their probable use being as sex calls. This interpretation has, however, been disputed, notably by Fabre. An argument in favor of the theory that insects can hear was the observation that numbers of insects will often "chirp" in unison, it being claimed that unless they could hear one another they could not keep up the observed synchronism in the production of sounds. The fact that insects have structures which appear to be adapted for receiving sound vibrations also bears on this problem. Fulton (*Sci. Monthly*, 27, p. 552) experimented on snowy tree crickets in which the (presumably) auditory organ is located in the leg. He found that while uninjured insects would sing in unison, if the leg were cut off, which in the insect is not a sufficient mutilation to cause shock reactions, this synchronism ceases, although the insects continue to make the noise. This seems to indicate that in the absence of auditory sensations, they are unable properly to time their sound production.

MOLLUSCA. Orton (*Nature*, 121, p. 352) stated that the oyster becomes sexually mature as a female early in the summer, and later changes to become male in the same season. At the end of the female phase, the gonoducts become filled with cells. Orton suggested that while some of these cells are phagocytes, cleaning up the passages, others are really new germ cells coming in from other parts of the body, and invading the germinal epithelium. This opens an interesting question as to where these new cells come from, or

where they are located before they come into the gonad.

According to the report for 1927 of the San Francisco Marine Piling Committee, shipworms of the genus *Xylotria* have been a source of loss in San Francisco since 1849 and in 1873 *Limnoria* made its appearance. These two genera are limited to waters having considerable salinity. In 1914 the European genus, *Teredo navalis*, got into this harbor and because of its adaptability to fresher waters, became especially abundant in the upper part of the harbor, where it did much damage. These all may be guarded against by the use of reinforced concrete piling or by creosoting wooden ones.

Grave (*Biol. Bull.* 55, p. 260) reported on an exhaustive study of the natural history of the shipworm, *Teredo navalis*, at Woods Hole, Mass., where it has occurred for many years. The breeding season in this locality extends from about May 10 to October 10 and there is no evidence of a lunar periodicity in any part of the season. The time of development from egg to metamorphosis is approximately five weeks, of which half is spent in the brood pouch in the maternal gills, and half as a free-swimming veliger. From metamorphosis to sexual maturity is six weeks or two months, adult size being reached in one year, the animals dying during the second year. The absolute size of an individual depends entirely on the amount of crowding of the burrows in infested timbers. If lobster pots and small timbers that are infested by the shipworms are taken from the water and allowed to dry in the sun, in from ten days to two weeks, the *Teredos* will all be killed. Since most of the infection occurs in July and August, this is the best time for this treatment.

Jatzenke (*Biol. Zent.* 48, p. 1) reported results of investigations on the biological significance of the mantle fluid of fresh-water clams. This fluid, which was subjected to an exhaustive chemical analysis, proved to be practically identical with the blood of the clam, and its function seems to be to act as a medium between the blood and the outside water. In marine organisms, the blood is isosmotic with the surrounding sea water and in analogous fashion the blood of the fresh-water lamelibranch is surrounded with an isosmotic fluid (mantle fluid) in which constancy of osmotic pressure is maintained by the filtration of excess of fresh water. Oxygen is not absorbed by the liquid of the mantle cavity but by the amoebocytes in it. Dakin (*Proc. Royal. Soc.* 103, p. 355) described the structure of the eyes of the scollop, *Pecten*, and of related genera. He concluded that there is so much diversity in the degree of development of these organs in related genera that it is not possible to explain them as arising through selection. *Spondylus*, which is sedentary, has eyes as well developed as those of *Pecten*, which is free living. It is possible, however, to explain the conditions in *Spondylus* through the fact that it had a free-swimming ancestor.

Nelson (*Biol. Bull.* 55, p. 180) stated that the pelagic larvæ of the mussel, *Mytilus edulis*, which fail to secure attachment at the proper time, are kept afloat considerably longer by the secretion of a gas into the mantle cavity. Through the use of holdfasts secreted on the surface film of the water, or by the use of the foot or tentacles of the siphon on this film, the larvæ may be transported for considerable dis-

tances. This gives this mussel a much wider choice in the selection of a place for fixation than is the case in other mollusks, which are entirely dependent on the conditions in their immediate neighborhood at the end of the larval period, and probably explains why *Mytilus* has such an unusually wide distribution.

REPTILES. An expedition was sent in 1928 by the New York Zoological Society to collect and study the giant tortoises of the Galapagos Islands, whose threatened extinction makes such study important at this time. The expedition was under the direction of Dr. C. H. Townsend, who collected and brought away for colonization elsewhere 180 specimens. These were located at the Botanical Gardens in the Panama Canal Zone; at the San Diego Zoological Society; at the Boyce-Thompson Arboretum in Arizona; in San Antonio and Houston, Texas; in New Orleans; and at the aquarium in Bermuda. The species collected was probably *Testudo guntheri*.

Morrison (*Nature*, 122, p. 684) reported that in young adders (*Vipera berus*) no toxic secretion is formed in the saliva until the third day after birth, but that it then appears with its maximum toxic powers.

BIRDS. Allard (*Am. Nat.* 62, p. 385) discussed the problem of bird migration and noted that the Glacial Epoch theory has held a prominent place in migration theories. As for the notion that when driven south by advancing ice the birds retained a memory of their northern home and returned to it on the recession of the ice, Allard thought that this might have occurred if it had all happened in a single generation, but that the process was so slow that no such social inheritance could have arisen. Calling to mind the demonstrated effect of violet rays on the nutrition of animals, Allard thought that possibly the final solution may lie in further study of the effects of light, especially the longer and shorter day, in stimulating a restlessness. There would still remain the question why the bird follows certain directions in migrating. This is possibly a tropism, but is not yet understood.

MAMMALS. According to Struthers (*Jour. Mammalogy*, 9, p. 300) the life history of the porcupine was very imperfectly known prior to this publication of his observations on the animals in their natural environment in northern

New Hampshire and in confinement in cages at Syracuse University. Mating takes place in November. In captivity and probably also in nature, the female makes the advances and there is little or no competition among the males. The gestation period is 16 weeks and normally only one young is born at a birth. The young at birth is sparingly covered with hair, but the quills appear on the second day and in a week are one-quarter of an inch long. The young can walk at birth and one climbed to the top of its cage on the second day. Nursing lasts for only about a week and the young then begins to feed on the normal diet of apples and bark. In spite of the fact that the size of the litter is so small and that there is only one litter a year, the number of the animals may be very considerable in any one locality. Struthers thought this is because, aside from man, the porcupine has in these localities practically no enemies; because of the nature of its food, it does not compete with any other animals for food; and because it lives to a relatively old age, it has a long period of sexual activity.

McGillivray (*Geog. Mag.* 54, p. 741) observed an individual beaver in northern Michigan which proved especially easy to study and photograph. A part of the beaver's dam was torn out each night and the animal was watched the next day while it made repairs. Larger sticks were first brought in as "studding" for the repair work, and material floated down from up stream to fill in behind this and complete the dam. Finally, clay and mud were dug up just above the dam and used as chinking material to fill the crevices. When obliged to go some distance for logs, the beaver always dug a ditch to the locality in question, though perfectly capable of dragging the logs overland. This was interpreted as a measure of safety, for if surprised by a carnivorous enemy the beaver could escape by water but would be unable to do so on land.

ZOSMA, KING. See ARCHEOLOGY.

ZULULAND, 26°16' S. lat. A portion of the Province of Natal in the Union of South Africa, to which was annexed Dec. 30, 1897. Area, 10,427 square miles; population, in 1911, 219,606. There are extensive sugar plantations, sugar output being in 1924-25 161,250 tons. See SOUTH AFRICA, UNION of, for the statistics on Natal.

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